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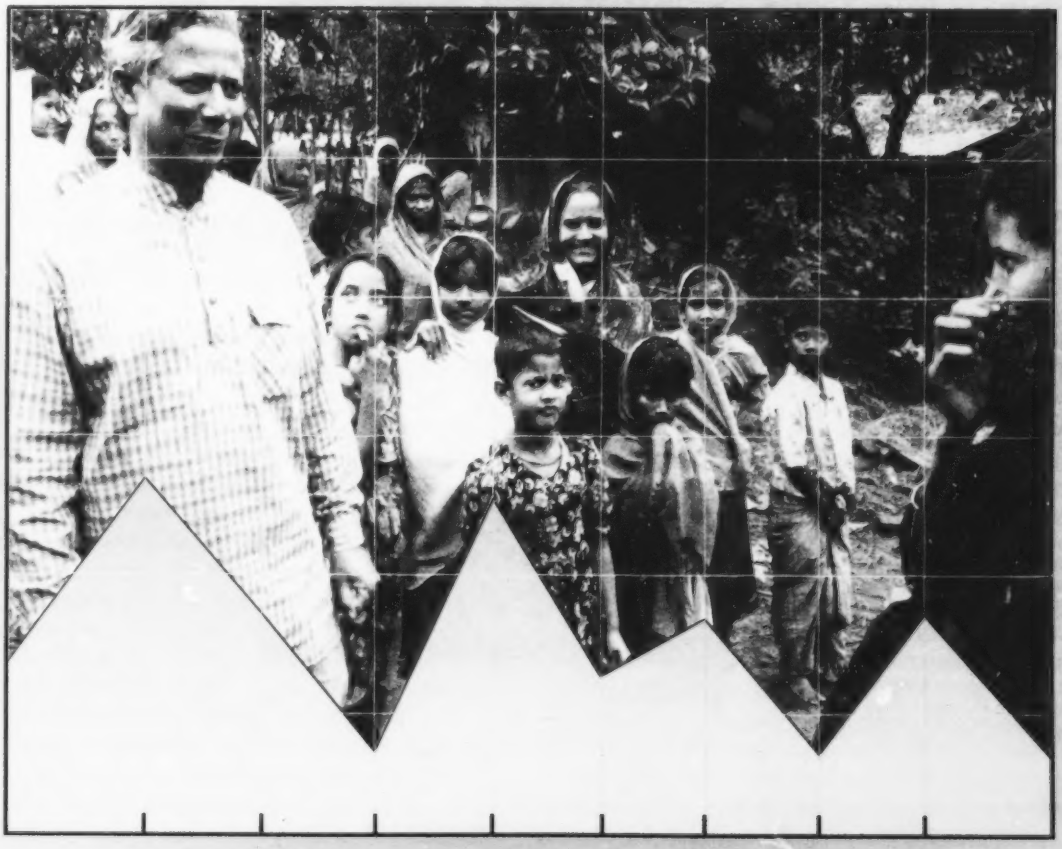
Financial services and sustainability



- Green investing
- UNEP Financial Institutions Initiative
- Community development
- Brownfields redevelopment
- Accounting and the environment

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Financial services: investing in sustainability

The financial services sector has the power to direct financial resources towards projects or companies that have demonstrated good environmental performance – and, more broadly, that respect the principles of social responsibility and human rights.

This sector includes a very wide range of activities, including public and private banking at the national or international level, export credit agencies, and the insurance and reinsurance industries. Its physiognomy is changing in every part of the world, with the mergers and acquisitions currently taking place in industrialised countries, and with foreign direct investment representing an increasing share of total capital flow: in 1997, FDI in developing countries was approximately US$160 billion, or 60% of total capital flow to these countries.

The financial services sector therefore has a key role to play in the world-wide quest for sustainable development. It is only during the last 15 years (and in the context of globalization) that the importance of this role has been recognized. A growing number of managers in the sector have now become aware of the need to better evaluate the environmental risks associated with their decisions, as well as the market opportunities provided by sustainable development initiatives.

Environmental risks vary from one financial activity to another. Most such risks are linked to the negative impacts on a company's financial results of factors such as environmental liability, the need to comply with stricter regulations, the impact of accidental releases, or loss of market share due to a bad environmental image.

Current environmental trends are also likely to affect the future of some industries. Climate change and loss of biodiversity, for instance, are already threatening investments in some forms of tourism. The effect of global warming on low-level skiing and other winter sports is one example. Climate change issues are of direct concern to the insurance industry because they may lead to increased occurrence of severe storms, drought and flooding. In 1998, insured losses following natural disasters and other weather-related events exceeded US$17 billion, a 37% increase since 1995. In the past 20 years, the number of natural disasters, mainly storms and flooding, has increased more than four-fold.

Finally, the responsibility for financing projects with significant environmental impacts can affect the image of financial institutions, as demonstrated by the increasing number of NGOs calling for greater corporate environmental and social responsibility.

Publicy funded international financial institutions like the World Bank group and the European Bank for Reconstruction and Development (EBRD) were among the first to include environmental considerations in their decision-making criteria. Bilateral development funds are also increasingly requesting environmental impact assessments of potential projects. However, much more needs to be done. Beyond insisting on better evaluations of environmental risks, managers of financial institutions can take a number of steps that lead in the right direction. For example, as a condition for granting loans, they can establish requirements such as ISO 14000 certification and ask for companies' environmental reports. They can also develop the use of environmental management systems in their own institutions, including in the management of their buildings and other property. Procurement policies and purchasing power can be used to stimulate the demand for energy efficiency measures and environmentally sound products. And financial institutions themselves should produce environmental reports on their own environmental performance as well as on the sustainable investment products they offer.

In addition, many investors are looking at new opportunities provided by the growing demand for environmental services and equipment. New waste treatment technologies and sophisticated monitoring equipment are just two examples of the type of products in which "green funds" are interested in investing.

With a view to creating greater awareness of all these issues – and placing the environment at the heart of decision-making in the financial community – UNEP has developed (since 1992) the Financial Institutions Initiative and (since 1995) the Insurance Industry Initiative. The growth in the number of members of these two initiatives clearly demonstrates increasing interest on the part of bankers and insurers.

However, more widespread changes in decision-making approaches are still hindered by the need to obtain short-term returns on investments (environmental returns will often be medium- or long-term), lack of experience with evolving environmental accounting and valuation procedures, the risks associated with the use of new technologies, and a general lack of environmental expertise in the financial sector. It is to help overcome such barriers that UNEP is developing a number of projects that exa nine ways and means to promote investments in renewable energy and energy efficiency, and to provide advisory services that assist informed decision-making in these areas.

While this issue of *Industry and Environment* addresses only a few of the many topics related to the financial sector and sustainable development in a globalizing economy, we hope it will provide some insights into the environmental challenges facing the financial services industry and the possible responses. ◆

The financial services sector: facts and figures

Introduction

The first modern banks are generally considered to have been established beginning in the 16th century. However, many banking functions are almost as old as civilization.

Table 1 outlines the main areas of activity in today's financial services sector. It should be noted that a modern financial institution could encompass a broad range of these activities. The world's largest financial institutions, measured according to revenues, are listed in **Table 2**. One of the challenges of describing the whole of the financial services sector relates to the shifting dynamics and emerging markets in some regions, together with the consolidation taking place in other parts of the world.

The value of using revenues as a single measure is questionable, though it is a practice to which most people relate. Specialists tracking the sector tend to consider the return on the assets employed in the business as a better test. This measures how well managements are using the assets to generate a return for their shareholders. Even so, further analysis is needed to compare similar institutions. The rate of return of a long-term mortgage operation looking solely at personal property will be very different from that of an investment house whose primary function is advising corporate clients on underwriting of securities.

In March of this year, the first ranking of financial institutions by shareholder performance was published by *Strategic Finance*. This lists the world's 400 largest financial institutions, insurers and investment banks in the order of their total return to shareholders over the past five years. The top ten are:

1. Aegon (Netherlands)
2. Firstar (US)
3. Sun America (US)
4. Capital One (US)
5. Jefferson Pilot (US)
6. Mediolanum (Italy)
7. Bank of Ireland (Ireland)
8. Bank of New York (US)
9. Zions Bancorp (US)
10. Power Financial (Canada)

The greatest returns had been achieved by a range of institutions outside the well-publicized global players.

Table 1
Financial services: from wholesale to retail, and from private to public

Investment houses	Provision of advice about and underwriting, distribution and maintenance of securities on behalf of corporations and governments. When an institution needs to obtain funds by issuing stocks or bonds, an investment banker may buy the entire issue and on-sell in smaller amounts. This process is known as "underwriting". Transactions also include mergers and acquisitions, divestitures and initial placements.
Corporate banking	Generally, the provision of debt-based finance and the acceptance of deposits from the corporate sector. The definition of "corporate", which varies according to the domicile of the institution, will range from single-employee businesses to transnational corporations.
Retail banking	Personal banking services, including cheque-writing and savings accounts as well as credit cards and automated banking services.
Savings institutions	This includes a traditional savings bank that will accept deposits and pay interest, financing its operations by on-lending deposits to other financial institutions or through wholesale investment. Mutual funds or investment trusts allow savers to buy a portfolio of shares in small increments, subject to a fee.
Mortgage institutions	These institutions finance the purchase of land and buildings by individuals and corporations. The property is mortgaged to the institution as security against the borrower being unable to repay the debt. Time horizons for this type of banking are longest, ranging up to 50 years or more.
While all of the above may be privately or publicly owned, the following types of institutions are all publicly owned:	
The World Bank Group	Owned by UN member countries, this consists of the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). The IBRD and IDA make loans to borrower governments for projects and programmes that promote economic and social progress.
The International Finance Corporation (IFC)	The IFC works closely with private sector investors and invests in commercial enterprises in developing countries and the Multilateral Investment Guarantee Agency (MIGA), which encourages direct foreign investment in developing countries by offering insurance against non-commercial risks and shares the same overall goals. Legally and financially, the IFC and World Bank are separate entities. However, the IFC draws upon the World Bank for administrative and other services.
Export credit agencies	Generally government-owned, these agencies provide insurance to exporters against non-payment of contracts and provide credit to buyers such that the exporter receives cash on delivery. They also insure overseas investors against political risks.

Consolidation within the sector

In the developed economies, the pace of change in the financial services sector was slow until the late 1970s. At that time a number of significant technological improvements brought with them increased complexity of operations, and the advent of electronic commerce resulted in increased international competition. The level of competition and the increasingly large amounts of capital needed to finance banking operations have acted as a driver for consolidation world-wide. Indeed, since the completion of Table 2, Citicorp has merged with the Travelers Group and Deutsche Bank has announced plans to acquire Bankers Trust, which had revenues of US$ 12,176 million in the last year.

The role of the central bank

In a market economy the role of the central bank is to act as banker to the government. Usually government-owned, it collects funds due to (and issues debt instruments for) government. A country's currency is issued by – and is generally a liability of – the central bank. In its role as the banker to the banking system, it holds and transfers bank deposits as well as supervising their operations and acting as a lender of last resort in order to provide confidence in the operation of the market. In some countries it also establishes, as well as having responsibility for regulating, the monetary system needed to implement domestic and foreign policy.

The euro and its influence

Since late 1995, when the Madrid Summit decided how a single European currency would be introduced in stages, preparations have been underway by central and commercial banks to accommodate this change. For the European banks it has not made much difference whether their countries were participating at the outset or not. Besides having operations in countries that would be participating, they have customers who would expect to be able to trade using the euro. For the financial sector world-wide this has meant the creation of an additional currency within its accounting system and the elimination of a num-

ber of currency exchange markets. The euro was formally launched on the commercial markets on 1 January 1999, though notes and coins will not be issued until 2003. Many system changes have been undertaken at the same time as Y2K adaptations have been implemented, given the closeness of the two key dates.

Global financial markets

The crash of the Mexican peso in 1994 was the first real sign that the globalization of capital markets had outstripped the global regulatory framework, such as it was. Subsequently we have had the turmoil in Brazil and the depth and spread of Asia's economic crisis, together with Russia's default on its debt.

The reasons for this "crisis of confidence" are generally thought to include the fact that many emerging markets have been weak, badly regulated and inadequately supervised. In addition, borrowers, whether governments or corporations, had borrowed too much short-term money, lulled into a sense of security by stable exchange rates. The fact that all financial markets are interconnected only added to the problem. As investors had to cover risk positions in declining markets, they were obliged to sell securities in unrelated markets. The impacts were felt all over the world.

There is now much talk of a new architecture being required to suit the industry of the 21st century. Its goals, not wholly compatible, are strong national sovereignty, financial markets that are regulated and cushioned, and the benefits of global capital markets. The best that can be expected is a compromise, with all three goals being partially attained

The insurance industry

As with the banking industry, the insurance industry has a long history, dating back earlier than 2300 BC. Caravans and convoys were developed with risk minimization in mind. In the Middle Ages, maritime trade was the basis of economic development and insurance against misfortune was of major importance. In 1629, the Dutch East India Company became the first modern insurer. The names of many modern insurance companies capture the traditional element of fire and marine insurance. Nearly everybody knows about the coffee-house keeper, Edward Lloyd, whose premises located near the River Thames became a meeting place for merchants and traders who underwrote various insurance policies at that very location.

Underlying the insurance system is the principle of "mutuality": a group of people with a common interest or risk are pooled together and pay into a joint fund, which will pay for the losses of a few members of this group. For premium calculation purposes, these "pool members" need to be rather similar.

Structure of the industry

Today the modern insurance industry provides financial protection for such diverse occurrences as damage to satellites or computer installations, and hijacking and demands for ransom.

Table 2
The world's largest financial institutions ranked by revenues

Rank	Institution	Revenues (US$ million)	Profits (US$ million)	Profits as % of revenues	Profits as % of assets
1	Credit Suisse Group	48,242	273.7	0.6	0.1
2	Deutsche Bank	40,792	551.5	1.4	0.1
3	Travelers Group Inc	37,609	3104	8.2	0.8
4	HSBC Holdings	37,474	5496	14.7	1.2
5	The Bank of Tokyo	34,750	-4271	-12.3	-0.6
6	Citicorp	34,697	3591	10.3	1.2
7	Credit Agricole Group	34,014	1689	5.0	0.4
8	Chase Manhattan Corp	30,381	3708	12.2	1.0
9	ABN Amro Holding NV	28,946	1975	6.8	0.5
10	Gan	28,936	48.7	0.2	0

Source: Fortune Magazine's Global 500, 1998

Note: The institutions in blue type are signatories of UNEP's Statement by Financial Institutions on the Environment and Sustainable Development

Two strands of insurance make up this sector. The first, direct or primary insurance, which comprises life and non-life insurance, offers a variety of policies and products to individuals and companies. A basic distinction can be made between specialized companies and those offering a wider array of products, e.g. liability insurance for cars, property insurance against weather-related damage, and eventually life insurance under one roof, as opposed to companies offering "solely" life or health insurance. This strand is very specialized, and companies might only cover specific types of insurance (e.g. dental) as a single business operation. The second strand is reinsurance, in which insurers offer policies to other insurers who might face ruinous economic loss if a particular catastrophe or disaster struck and eventually exceeded the predicted maximum impact. Typical reinsurance activities lie in the area of natural disasters (earthquakes, storms, floods, etc.), explosions, and safety of nuclear power plants. In addition, means of mass transportation might bear risks that in the end can only be handled by reinsurance (airport or plane crashes, train accidents, etc.). Eventually these risks exceed even the possibilities of reinsurance. Here, a specific form of reinsurance ("pool insurance") is needed.

For both primary insurance and reinsurance, the right mix in the portfolio determines whether a company is able to "survive" a set of losses. Hence, risk assessment and risk minimization as well as the precautionary approach are the bread and butter of a successful business operation.

A look at the Global 500 list reveals that insurers, who manage about one-third to one-half (that is, about US$ 5 to 8 trillion) of the world's stock markets, should not be overlooked in terms of their market influence, investment potential and market capitalization. **Table 3** gives a brief overview of the top ten according to revenue, to allow comparison with the banks.

As in banking, the insurance industry has undergone some breathtaking market shifts and changes. The increased liberalization of the world economy and of regional markets, particularly in Europe, has led to an increase in internationally active companies. Of course, market consolidations are well under way and mergers are nearly as frequent as in the banking sector.

European market trends

The creation of a single European market within the European Union, and the prospect of the euro, have had some effects in the insurance sector. However, these have been less prominent and dramatic than initially expected – not least because insurance is a conservative business. The main impacts can be seen on national markets: the structures and scope of the insurance sector have changed. Many companies have diversified their operations and now provide unit trusts, mortgages and pensions in addition to general insurance products. Insurance knowledge and know-how, on the other hand, are increasingly required in non-insurance organizations such as building societies (savings and loans), banks, retailers, or providers of mass transportation. There is also a tendency in some European economies to increase the tax burden on the insurance sector, which prompts reactions such as shifting of some business operations to neighbouring countries or capital flight. Other factors are influencing this trend. In particular, large European companies have their market share in all EU national markets and beyond. Which of the aforementioned trends will ultimately steer developments in the insurance sector is not yet very clear. However, experiences in the banking industry suggest an increase in mergers with a few "global players" taking the lead.

Some differences between bankers and insurers

Although banks and insurance companies share many concerns and practices, the distinctions should not be underestimated. They are often referred to when the merger of a bank and an insurer is discussed, or even when the question of merging their advocacy and lobbying structures is considered. While housekeeping policies might be similar, risk management strategies and the products and services they offer are rather different.

Insurers are much more long-term investors than banks. This is obvious in the case of life in-

Table 3
The world's largest insurers ranked by revenues

Rank	Institution	Revenues (US$ million)	Profits (US$ million)	Profits as % of revenues	Profits as % of assets
1	AXA	76,874.4	1357.0	1.8	0.3
2	Nippon Life Insurance Co.	71,388.2	2118.3	3.0	0.7
3	Allianz AG	56,785.3	1171.7	2.1	0.6
4	The Dai-ichi Mutual Life Ins.	47,441.8	1492.4	3.1	0.7
5	State Farm Insurance Co.	43,957.0	3833.3	8.7	3.7
6	Sumitomo Life Insurance	42,278.6	1094.4	2.6	0.6
7	ING Group N.V.	38,673.8	2104.1	5.4	0.7
8	Prudential Insurance Co.	37,073.0	610.0	1.6	0.2
9	Meiji Life Insurance Co.	31,047.3	1006.6	3.2	0.8
10	Assicuranzioni Generali Spa	30,816.0	605.0	2.0	0.7

Source: Fortune Magazine's Global 500, 1998

Note: The insurance groups (or members of the group) in blue type are signatories of UNEP's Insurance Industry Initiative for the Environment.

surance and pension funds. A five-year investment is a long-term commitment for a bank, while insurers look at 30 or even 40-year return periods. This leads to different investment decisions, and eventually to the requirement that operations be more sustainable.

Another important difference is that once a disaster has struck and a claim needs to be paid out, insurers need to make the invested money available at short notice. Tactical considerations, e.g. if stock prices have gone down waiting until they come up again, sometimes cannot be applied. Hence, in order to minimize the risk, the investment basket is much wider and can be much more diverse: real estate, investment funds, specific companies or technologies, currencies, governmental funds – long, short and medium-term – are therefore areas of activity. Insurers consider investments as a sub-sequence of their main business operation, and as a financial basis for underwriting risks. They are under a greater obligation to secure their assets, since each policy contains the promise to pay out a claim if misfortune happens. Consequently, insurers are legally bound to observe the principles of security and profitability. In the light of changes in the financial services sector since the 1980s in various countries and regions, financial markets have been deregulated. This has led to greater fluctuations in the stock and currency markets. In order to maintain the reliability of the insurance sector, particularly in Europe, new rules have been developed. These regulate in a very detailed way what kind of investments an insurer is allowed to make. They also set limits on the amount an insurer is allowed to invest in specific categories (e.g. stocks, lending, currencies, real estate, etc.).

Other financial services providers

Over the last ten years, the services sector has developed considerably. Many companies that are not traditionally financial services providers have broadened their scope: retailers, travel agencies and other members of the tourist industry, airlines and other transportation services are now offering more "customer-oriented" products – including various payment options, credit cards, a credit account at their own bank, or insurance products. Moreover, the provision of financial services has reached manufacturers, automobile companies, the telecommunications sector and other multinational enterprises. Their current engagement in the financial services sector is limited, but there is a tendency to offer an increasing number of services from one supplier, and clients and consumers are increasingly taking advantage of this. You can now buy your pension at the supermarket and obtain your credit card from an airline. Your garage will arrange a loan for a new car at rates and prices that compete very favourably with those of traditional providers. This type of niche market attack can only be expected to increase.

Environmental considerations

The financial services sector has many reasons to promote sustainable development. Investment in projects that take no heed of the future, and that destroy or deplete natural resources needed for future development, does not make economic sense. Environmental degradation and man-made ecological catastrophes threaten the very basis of the insurance industry, which depends on being able to manage and reduce risks.

Even businesses that have been able to ignore environmental issues in the past now have to respond to the increasing concerns of clients and governments and a growing body of international law. New regulations and liabilities cover, for example, ozone-depleting substances and the transport of chemicals. Regulations relating to greenhouse gas emissions are currently being negotiated. The negative environmental impacts of some types of industry, and some types of development, are increasingly covered by international legislative frameworks. Bankers and insurers must operate within this growing global regulation. As we approach the end of the decade and of the millennium, the interdependence of environmentalists and business is becoming more and more evident. It is not just a question of what the financial services sector can do for the environment, but also of what environmental awareness can do for bankers and insurers.

Taking environmental aspects into consideration is more than a PR tool. In recent years, individual investors and organizations have become increasingly interested in "green" and "ethical" investment opportunities. They want to invest in a sound future, and they consider sustainable development a means to achieve this goal. Green and ethical funds now have more than US$ 1.1 trillion under management.

Conclusions

The whole of the financial services sector is in a state of great change. This has been true for the past ten years, and the only certainty is that there will be more change in the future. Little consensus exists on what the industry will look like in ten years time, apart from the fact that it will be very different. Information technology is a key survival issue, and all commercial organizations have strategies in place to ensure that the billions being invested are well spent.

Many institutions have also recognized that paying attention to the environment, either through better internal management or through new products and services, pays economic dividends. Several have recognized that a shift towards more sustainable business practices, from strategic planning through to service delivery, is another key survival issue. These "pioneers" are to be encouraged as visionaries, rather than ridiculed as mavericks. It is to be hoped that others will follow their lead.

At the Davos World Economic Forum on 31 January 1999, UN Secretary General Kofi Annan said:

Specifically, I call on you – individually through your firms, and collectively through your business associations – to embrace, support and enact a set of core values in the areas of human rights, labour standards, and environmental practices.

Why those three? In the first place, because they are the areas where you, as businessmen and women, can make a real difference.

The financial services sector has responded to this call in working together with UNEP on the Financial Institutions Initiative. ◆

How can the financial sector realize its full potential to support sustainable development?

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Abstract

The financial services sector potentially has a key role to play in supporting sustainable development. But should it be expected to act as a global policeman, reinforcing environmental and regulatory standards and public demands for environmental protection through its financing decisions? This article explores the ways financial services (primarily banking) organizations are impacted by environmental issues. It also assesses current responses across the sector, and looks at some future trends and challenges.

Résumé

En matière de soutien au développement durable, le secteur des services financiers a un rôle potentiel majeur à jouer. Mais doit-il pour autant s'ériger en gendarme de la planète en renforçant, par ses décisions financières, les normes environnementales et réglementaires, ainsi que les exigences du public en matière de protection de l'environnement ? L'article explore comment les questions d'environnement affectent les organismes financiers (principalement les banques). Il évalue également les réponses actuellement apportées par ce secteur et fait le point sur quelques-uns des défis à venir et des tendances.

Resumen

El sector financiero desempeña un papel potencialmente fundamental de apoyo al desarrollo sostenible. Pero hemos de plantearnos si le corresponde realmente erigirse en guardián mundial, encargado de reforzar las pautas medioambientales de regulación y las demandas del público para la protección del medio ambiente, a través de sus disposiciones financieras. En el presente artículo se estudia la forma en que los organismos de servicios financieros (y los bancarios, en particular) se ven afectados por las cuestiones medioambientales. Asimismo, se evalúan las soluciones actuales que ofrece el sector y se estudian las tendencias y los desafíos futuros.

Introduction

The environment is now widely recognized as one of the main strategic drivers of strategy for both private sector and government and public sector organizations. There is continuing growth in awareness of environmental issues, ranging from global problems such as natural resource depletion, climate change and ozone layer depletion to regional issues such as transboundary air and water pollution and local issues such as noise and waste disposal. This increasing awareness continues to place greater pressures on both government and business to demonstrate that they are taking appropriate action to safeguard the environment in relation to all their activities.

The environmental agenda has now broadened to include consideration of social and economic impacts. Decision-makers are being asked to demonstrate that they are pursuing "sustainable development" – that is, broadly, development which "meets the needs of the current generation without prejudicing the interests of future generations."

In the past, the efforts of governments, regulators and environmental campaigners to persuade the private sector to recognize and manage environmental pressures have been focused on the primary production and manufacturing companies. Now, however, there is recognition that the services sector, particularly financial services, may be a key link in achieving truly "sustainable development". In summary, if you can influence the companies' financial backers to consider the environmental impacts of their financing decisions, it may be possible to target financial resources towards companies and projects that are in line with sustainable development principles.

There is increasing evidence that the financial services sector recognizes its potential role, but a range of issues and challenges have yet to be confronted. Firstly, what is the scope for the banking sector to influence uptake of policies and practices which are in line with sustainable development?

The global influence of the financial services sector

Key factors which affect the sector's ability to promote sustainable development are the volume and type of financial support provided. World Bank figures[1] indicate that around 33% of all private international finance is in the form of short or long-term debt. The remaining two-thirds is in the form of direct or equity investment. In theory, the level of management influence which a financier may have is greater for equity investment than for debt-based finance (**Figure 1**). However, the broad figures hide a more complex picture. A significant proportion of all investment finance involves loans, guarantees and insurance provided by export credit agencies and is, in effect, debt-based finance. Around 40% of all foreign direct investment goes to developed countries, and a significant number of countries currently attract little or no foreign investment. Inevitably, the countries receiving no investment include many of those where financing for sustainable development solutions is most required.[2]

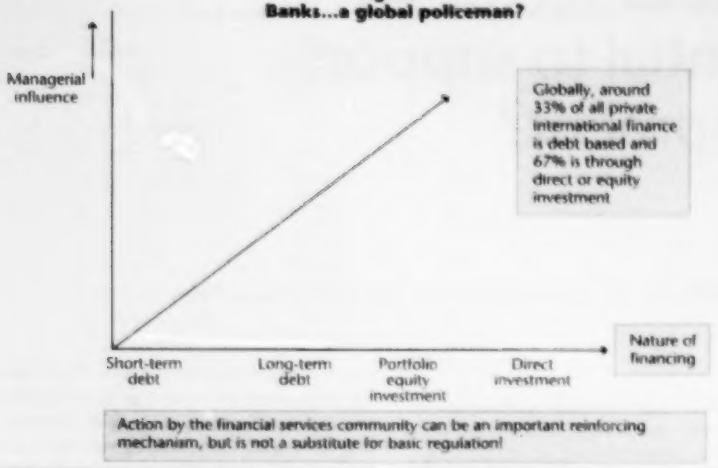
The level of potential influence is further impacted by key commercial considerations. Chiefly, these include the requirement to finance only "viable" projects that will ultimately deliver value to the bank's shareholders, as well as the intense competition to provide financing in some parts of the world that may affect the level of influence a financing organization is capable of exerting on any given project without prejudicing its competitive position. Many would suggest that capital, like water, follows the route of least resistance and does not necessarily concentrate where it is most needed!

In summary, while the idea of banks acting as a global environmental policeman may be attractive to some, commercial reality means that there are frequently significant limitations on their ability to perform that role. Against this background, what are some of the key environmental impacts and issues for financial services organizations?

Environmental impacts and issues

Key commercial and operational activities, and the associated environment-related impacts and issues that may arise for financial services organizations are summarized in **Table 1**. As we shall see below, while many organizations have focused efforts on addressing operational environmental issues to date, the major areas of impact that a financial services organization may have are through its commercial activities. **Figure 2** illustrates how environmental issues, which have pre-

Figure 1
Banks...a global policeman?


Managerial influence
Globally, around 33% of all private international finance is debt based and 67% is through direct or equity investment
Nature of financing
Short-term debt
Long-term debt
Portfolio equity investment
Direct investment
Action by the financial services community can be an important reinforcing mechanism, but is not a substitute for basic regulation!

viously been considered as "technical" matters for the client, can feed through to have a financial, legal or reputational impact on a bank. It is important to note that these impacts may occur not just at transaction level, but in terms of overall portfolio risk to an organization.

It is clear that, as for manufacturing companies, environmental issues represent a source of both potential risk and opportunity for financial services organizations. The challenge is to manage, not necessarily minimize, risks effectively and to maximize the opportunities. What are the current pressures that are pushing the financial services sector to address sustainable development pressures?

Drivers for change

A wide range of external and internal pressures exist which may influence a particular bank or financial sector organization to respond to environmental pressures. These drivers, which have been identified by UNEP and others,[3] are focused around the need both to manage environment-related risks and to identify and explore environment-related opportunities that fall within the scope of the organization's operations. It is important to note that any organization's response will be dependent on a number of factors, including, for example:

- the size and geographical scope of the organization's operations;
- the external environmental and broader commercial and regulatory environment;
- the level of consideration of environmental issues within key shareholder and other stakeholder groups;
- the demand for new products and services relating to environmental issues;
- the level of competitor response to environmental issues; and
- the status of staff and management awareness of environmental issues.

There is currently considerable variation, both nationally and internationally, in the way individual organizations are affected by these drivers. There is, however, a gradual trend towards a more harmonized approach across the sector in addressing environmental issues. This is driven, in part, by increased regionalization and globalization of the sector through mergers and acquisitions and joint ventures, and by increased dialogue between various stakeholder groups, nationally and internationally, which is ensuring that organizations are potentially exposed to similar reputational risks wherever they operate in the world.

Table 1
Financial services: environmental issues and impacts

Commercial activities	Issues/impacts
Corporate/retail lending	◆ Credit risk ◆ Security value ◆ Portfolio risk ◆ Reputational risk ◆ New products/services
Investment/fund management	◆ Value of investment ◆ Reputational risk ◆ Legal liability ◆ New products/services
Insurance	◆ Value of investment ◆ Management responsibilities
Operational activities	**Issues/impacts**
Property management	◆ Water ◆ Waste ◆ Energy ◆ Maintenance and refurbishment ◆ Contractors
Office services	◆ Use of paper ◆ Hazardous materials ◆ Office equipment ◆ IT
Purchasing	◆ Influence on suppliers ◆ Procurement standards/specification
Transport	◆ Staff transport policy ◆ Fleet management
Health and safety	◆ Staff ◆ Contractors
Communication & training	◆ Internal communication ◆ Staff training ◆ Stakeholder relations

In addition to these broader pressures, there are also initiatives within the sector to promote a more harmonized approach to environmental management within the financial community.

At an institutional level, for example, the World Bank/IFC and the European Bank for Reconstruction and Development (EBRD) have promotion of sound environmental management as a core element of work with their financial partners – through which they lend and invest – around the world. This is because these institutions have a mandate to consider environmental issues in their wider operations, a mandate passed on to their partners. Typically, partners are asked to consider environmental risk issues in their credit assessments or investment decisions, and to notify the funding institution of their overall environmental exposure through their portfolio of loans or investments.

EBRD and IFC have invested heavily in developing environmental policies and procedures that they apply to their own operations and through their financial institutions' lending and investment programmes. They are at the forefront of encouraging more environmentally responsible financing, particularly in emerging and transition economies.

The financial sector is also being addressed within the promotion and implementation of environmental management standards. Various organizations are engaged in applying the international environmental management standard, ISO 14001, to elements of their operations. The EU Eco-management and Audit Scheme (EMAS) is currently being revised to allow participation of service sector organizations, including financial services.

In support of the revision of the EMAS regulation, a group of six leading European banks worked together in 1997 to develop a common framework for environmental management, in line with EMAS, which could be adopted by the financial services sector.[4] The work identified, for example, the key components of an environmental policy for a financial services organization, which included:

- legal compliance with relevant environmental legislation related to, for example, emissions from business printing works and waste disposal;
- integration of environment into core financial products and services, both in terms of risk control (e.g. built into credit ratings) and as a product differentiation (e.g. environmental and ethical investment products);
- integration of environment into the business's operations (e.g. property management, procurement and use of natural resources);
- periodic review of policy implementation;
- development of specific environmental targets;
- staff awareness, responsibilities and training in environment; and

• public disclosure of environmental performance.

As part of this work, the banks also identified the incentives cited most frequently as drivers for financial organizations to implement environmental management systems. These are:

• management of financial, legal and reputational risks associated with environmental issues, which may arise within insurance, credit or investment activities;

• improvement of internal operational efficiency and reduction in operation costs, e.g. through the reduction in energy consumption or waste minimization;

• opportunities for development of new financial products linked to environmental performance;

• response to pressure from stakeholders, in some countries formalized in legislation, for transparency in the reporting of their handling of environmental issues; and

• response to competition from other financial services organizations, nationally and internationally, seeking to improve market positioning through adoption and positioning of environmental policies and products.

They also identified barriers to implementation that exist in some organizations, including:

• perceived cost (in time and resources) to implement environmental management;

• perceived risk of making policy statements in this area that cannot be supported;

• lack of board level support for environmental management; and

• potential for isolating existing or new stakeholders that are not supportive of the environmental position.

In practice, however, these barriers are becoming less of an issue in most organizations, as environmental issues are raised up the business agenda and become an integral part of responsible sound management and corporate governance.

Engaging in sustainable development: current status

Against the background of drivers, incentives and barriers outlined above, where is the financial sector currently in engaging and responding to sustainable development?

In the 1999 survey of the Top 350 UK quoted companies carried out by the Pensions and Investment Research Council (PIRC),[5] 35 of the 50 financial sector organizations in the sample (or 70%) have provided some form of external statement on environmental policies and performance. This represents a significant increase from 26 organizations (or 52%) reporting in 1998. However, the sector overall is still some way behind in its public environmental reporting compared with other sectors, including natural resources, utilities, and industrial and consumer goods companies. Only seven of the 50 financial sector organizations produced a separate environmental report in 1999. While this perhaps reflects the relative infancy of systematic consideration of environmental issues in the sector, it also demonstrates the ground still to be covered.

Further evidence of the current level of engagement in environmental management in the sector comes from the recent survey of signatories to the UNEP Financial Institutions Initiative carried out by PricewaterhouseCoopers. The survey was published by UNEP this year.[6] The Initiative now has around 150 signatory organizations, which are committed to a series of principles relating to the environment and sustainable development. The survey obtained detailed responses from 63 organizations (out of a total of 114 sampled) and sought to provide a snapshot of the current status of environmental management practices in banks around the world. The survey revealed that:

• over 69% of signatories have a stand-alone environmental policy (**Figure 3**) and 90% have some form of dedicated environmental management function;

• the majority of organizations have, or are developing, specific environmental policies and procedures covering corporate credit (74%) and investment (63%). Fewer have policies covering investment banking (53%) or insurance (38%);

• 60% of organizations have taken steps to formally integrate environment into credit decisions, while only 20% have addressed this issue within overall strategy and portfolio management; and

• 60% of organizations have developed and marketed some kind of "green" financial product, with the most popular being ethical and environmental investment products, environmental advisory services, and discounted loan products.

The survey also revealed that the most significant obstacles to advancing the integration of environmental issues into credit and investment analysis are:

• translation of environmental impacts into financial implications;

• availability of data that are comparable between companies; and

• "perceived" lack of materiality of environmental issues to bottom line performance.

In considering the results of this survey, it should be recognized that all those organizations surveyed have already signed the UNEP Statement of Environmental Commitment and are therefore sensitized to environmental issues to some degree. Moreover, most of the 63 responses received came from organizations whose domestic country of operation is in Western Europe, which might again indicate a higher level of awareness of environmental issues.

In summary, both the PIRC and UNEP surveys indicate that significant progress has been made within the sector in getting environmental and sustainable development issues onto the management agenda in the financial sector. However, they also reveal that a lot more work is required both to spread the message across the sector and to get "environment" truly integrated at all levels, even within organizations that have adopted environmental policies. So what does the future hold?

Trends and challenges

There are a number of trends, both specific to the financial services sector and more general, that will mean the sector's role in pursuit of sustainable

Figure 2
Credit and investment appraisal: how environmental issues impact on banks

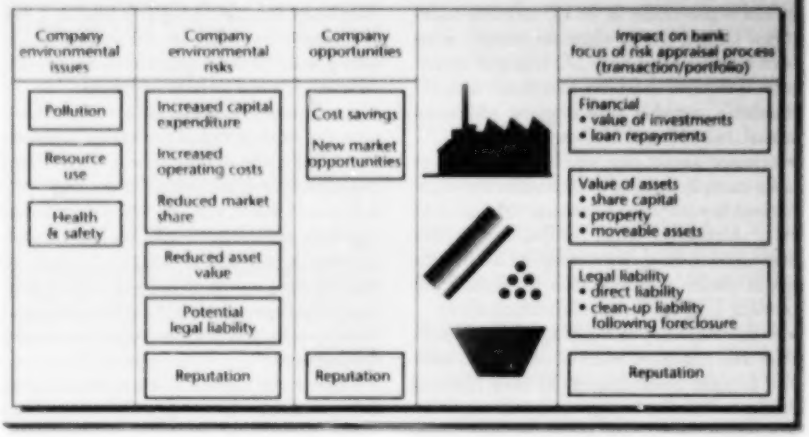
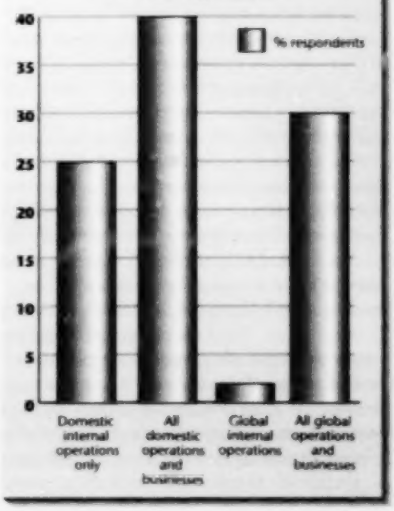


Figure 3
Scope of environmental policies in UNEP signatories



development is destined to increase over the next few years. These include, for example:

- increasing demands for financing for environmental improvement in the EU accession countries of Central Europe where, for example, it has been estimated that Euro 122 billion of investment is required to achieve compliance with EU standards, together with ongoing additional annual costs of Euro 12 billion;
- increased competition, which means that there is, for example, pressure to understand and quantify both key credit and investment risks and drivers of shareholder value. For financial services organizations, the ability to recognize and to value risk in relation to various financial products will continue to be key commercial differentiators;
- further emphasis on building closer relationships with customers, based on strong reputation and detailed understanding of their business needs;
- increasing use of IT and gradual regionalization/globalization, which will provide significant opportunities to improve operational efficiency;
- further strengthening and harmonization of the environmental regulatory framework internationally, which will mean increased risks and opportunities, particularly in countries where environmental controls have previously been weak;
- gradual integration of environmental policy within broader policy and regulatory frameworks, which will further increase pressures to respond positively to environmental issues. In the UK, for example, there are currently proposals to introduce formal environmental responsibilities for main board directors through the ongoing review of company law. There are also proposals to require pension fund mangers to disclose their ethical/environmental investment policies;
- introduction of financial and economic instruments as environmental protection measures, which will assist in crystallizing the financial implications of environmental issues; and
- increased public and political demand, both nationally and internationally, for greater corporate transparency and accountability, which will place further pressure on financial organizations to, at a minimum, disclose the policies and procedures they have in place to pursue sustainable development.

These trends, in turn, raise a number of interesting challenges for the financial sector. These include:

- addressing the balance between short-term financial return and long-term economic, social and environmental impacts of financing decisions through developing indicators that can be factored into financing decisions;
- identifying reliable, relevant, consistent environmental and sustainable development information to support financing decisions;
- development of new products/services that can support sustainable development solutions;
- improving the relationship between private financing and public sector investment programmes designed to support sustainable development;
- educating people involved in financing decisions and getting sustainable development integrated into strategic and operational decision-making processes; and
- balancing the need for transparency and accountability with commercial sensitivities.

The financial sector has come a long way in the last ten years, but it still has some way to go if it is to realize its full potential to support sustainable development. The financial sector's response to these challenges over the next few years will be a key feature in influencing both the overall scale and the speed of our response to the issues raised by pursuit of sustainable development. ◆

Notes

1. *World Bank Development Report*, 1996.
2. *Foreign Direct Investment and Environment*, OECD, 1997.
3. *The Role of Financial Institutions in Achieving Sustainable Development*, European Commission, DGXI, 1997.
4. *EMAS and the Financial Services Sector: A Report from Six Banks*, PricewaterhouseCoopers, 1997.
5. *Environmental Reporting 1999: The PIRC Survey of the FTSE 350*, PIRC, UK, 1999.
6. *UNEP Financial Institutions Initiative 1998 Survey*, UNEP, Geneva, 1999.

The value of environmental performance to financial stakeholders

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Abstract

The link between corporate financial and environmental performance is increasingly apparent. Corporations may seek to gain financing advantage by promoting the latter. The value of corporate environmental performance to financial stakeholders varies with type of financing as much as with the extent and specific details of environmental improvement. Corporations seeking financing, as well as governments and NGOs, should be familiar with the different financial services sectors and their specific needs and issues.

Résumé

Le lien entre les performances financières et les performances environnementales des entreprises est de plus en plus évident. Les entreprises peuvent tirer des avantages financiers en favorisant la protection de l'environnement. Les acteurs financiers évaluent les performances environnementales d'une entreprise tant en fonction du type de financement qu'en fonction des améliorations spécifiques apportées et de leur ampleur. Les entreprises à la recherche de moyens financiers, les gouvernements et les ONG devraient se renseigner sur les différents secteurs financiers, leurs besoins et leurs problèmes spécifiques.

Resumen

La interrelación entre el rendimiento financiero de las empresas y la situación del entorno resulta cada vez más patente. Las empresas podrían beneficiarse de ventajas financieras mediante la mejora del medio ambiente. Para los dirigentes financieros de una empresa, el valor de sus logros en favor del entorno varía tanto en función del tipo de financiación, como del alcance y de los detalles específicos a los que afecta la mejora medioambiental. Tanto las empresas en busca de financiación como los gobiernos y las ONG deben estar al tanto sobre todos los sectores financieros existentes, sus necesidades específicas y su trayectoria.

Many researchers have provided either anecdotal or statistical indications that there is a relationship between environmental and financial performance. "It appears that environmental performance has the potential to affect a firm's rate of return, cash flows, creditworthiness, price of its publicly traded securities, and/or the likelihood of filing a property or casualty claim."[1] Such potential should have a resultant impact on the availability of financing, investment and insurance. This raises the question of the value of environmental performance to financial stakeholders, as well as the corollary question of how financing benefits can be gained where there is value.

To promote environmental performance benefits to the financial community, it will be necessary not only to show evidence of performance but also to illustrate the financial benefits. Environmental performance can be thought of as the outcome of comprehensively addressing the running of a corporation with the environment as a strategic focus. It is a component of overall strategic environmental management. However, such strategic environmental management involves more than developing the scientific and technological value as measured by environmental performance indicators. The additional relationship of technical environmental performance to financial performance must be made. Strategic environmental performance must include the selling of financial benefits, especially real and possible revenue gains in addition to expense reductions. This is especially the case where financing is being sought to capitalize process changes that in themselves are being driven by environmental performance indicators.

In the broad context, financial service providers can be separated into three categories: debt, equity and insurance. The relevance of environmental performance to each of these categories is different. For debt, the primary concern is to minimize risks. There is no upside potential beyond making sure that the normal schedule of debt repayment is not impacted by environmental issues. For equity, similar downside risk concerns exist but there is also the potential for upside gain as the investment benefits of eco-efficiency and long-term sustainability. In the case of equity, there is not only lesser risk but potentially higher profit. Insurance is an entirely different category.

Insurance uses many of the same risk assessment techniques relative to underwriting as debt or equity players, but insurers are in the business of being paid to take other parties' risks, not avoid them. Insurance will be priced to meet these risks, whatever the level. The value to the insurer of improved environmental performance by the insured is less beneficial than to the insured themselves as a way to reduce insurance premiums.

These three financial service sectors have different environmental concerns. For debt, the primary concern is liability avoidance. This is the primary emphasis of commercial banks in the United States that have had to bear a certain amount of the burden of clean-up of contaminated real estate, either directly or indirectly as a result of diminution of collateral value. However, the United States should not be considered as being alone in having such concerns. Other countries, including many in Europe as well as developing countries, have recently enacted tough environmental laws and regulations that carry heavy liability implications for lenders. For equity, liability avoidance is a key driver for risk management while eco-efficiency and long-term sustainability are concepts that contribute to profitability.

Insurers are primarily concerned with quantifying environmental risks appropriately, so that pricing of premiums to cover the inevitable claims can be done with an appropriate profit margin. One aspect of this is reliance on the projection of future conditions based on past precedent. The primary example of the problems of changing conditions is related to climate. The insurance industry is concerned that climate change appears to be influencing the severity of climatic events that are, in turn, causing increased property and casualty impacts. Such impacts lead to higher insurance claims that were unanticipated, which in turn may reduce overall profits (if not contribute to losses) for the insurance companies. Similarly, insurers have a long-term and broad-based interest in environmental performance, as it may impact their business in ways not necessarily related to the specific insuring of more narrowly defined environmental risks.

Regardless of the type of financial institution, if environmental performance is a consideration, corporations must have or develop criteria for evaluating environmental performance. This is not an easy task, since "there appears to be no clear consensus on how to define environmental performance at the firm or plant level, nor how to report such performance to the general public or to the financial services industry."[1] However, major categories of performance that can be considered in a broad context, even as measurement and reporting issues are unresolved, include evaluation of historic liability, ongoing compliance, eco-efficiency and sustainable practices. Historic liability is a cost to the bottom line, usually asso-

ciated with correction of past pollution. Compliance with current laws and regulations can be quantified as a cost to come into compliance or as a cost of non-compliance (such as fines or penalties, or perhaps losing the right to operate).

An offshoot of environmental compliance is ensuring that other parties are not damaged such that defense costs or settlements are incurred as a result of property or bodily damage. Eco-efficiency reduces costs by minimizing expenses such as energy, raw materials and waste disposal. However, eco-efficiency does not imply that the process itself is sustainable, only that it is better relative to other or former practices. By moving to sustainable practices, the activity will generate output with effectively no net impact on the source material input (for instance, forests are replanted and harvested in equilibrium as a source of raw materials for the wood products industry). Energy is taken from renewable sources and waste is recycled or eliminated. As a result, the enterprise is far less dependent upon the variation in commodity availability and pricing that is ultimately inherent in unsustainable practices. Unsustainable practices can ultimately leave a particular company or industry in shaky financial condition. Each of the above performance factors will have more or less importance to the different types of financial institutions.

Beyond establishing parameters, value judgments have to be applied on the importance of each parameter. Each can be judged on the basis of "philosophic absolutism", "best in class" or available data. Philosophic absolutism involves assigning negative or positive judgements merely on the basis of involvement in an activity. The assumption is that good behaviour will have a positive financial impact (or that it should be rewarded in any case by preferential financing conditions) and that bad behaviour, irrespective of even potentially beneficial other behaviours, should be punished. The petroleum industry is a simple case. If one subscribes to the concept that carbon emissions should be dramatically cut to avoid further global warming, then in the absolute the petroleum industry should arguably not receive financing. This is not a financial approach, except in the longest-term view or in the most clear-cut cases. Best in class considers relative performance against peers. In contrast to philosophic absolutism, the more eco-efficient petroleum companies may be viewed as more financially sound, even as the larger issue of carbon emissions is not specifically addressed. However, data necessary to make absolute or even relative decisions are often elusive and hard to quantify. As a result, we fall back on what we can measure as opposed to what we would like to measure.

The more tangible the environmental issue, the more tangible the measurement tends to be. As a result, historic liabilities and their financial impact can be assessed much more concretely than a corporation's competitive edge due to its institution of sustainable practices can be predicted. It is this complementary dynamic between data availability and the tangibility of financial impact that has led to a higher level of awareness and action regarding debt transactions than either equity or insurance. The corollary view is that the debt players have less appreciation of eco-efficiency and sustainable practices since these do not have as much, if any, tangible impact on individual debt financing transactions. Unfortunately, the difficulty of measuring the financial benefits of eco-efficiency and sustainability makes it harder to promote those benefits to the equity players.

The salient point is that corporations seeking to gain financial advantage through promoting their environmental performance need to market those attributes consistently with the perception of benefit to the different financial institutions. Promotion of sustainable practices may be well received by long-term investors, only to fall on the deaf ears of the short-term lender who perceives investment in such practices as representing unnecessary costs that may result in a competitive disadvantage. Similarly, NGOs seeking to influence financial institutions need to recognize what motivates the different types of financial institutions and promote appropriate measurement and reporting for the different needs.

Corporate environmental reporting is on the rise and will be a tool for use by the finance community. This is evidenced by the emergence of organizations such as the Coalition for Environmentally Responsible Economies (CERES) and their reporting programme, as well as periodicals such as *Tomorrow*, which focuses on corporate environmental issues.[2] The guidelines of the Securities and Exchange Commission in the United States relative to the need for publicly traded corporations to disclose contingent environmental liabilities in annual reports is a related phenomenon. In addition, environmental rating agencies provide an external form of environmental reporting. The Global Reporting Initiative (GRI) is on track to develop a common environmental reporting format.

The one caution is that much of the recommended data acquired for such standardized reporting may be good and interesting relative to environmental impacts, but only marginally relevant to the financier. The question is whether corporations that are motivated primarily by economic interests gain additional value by collecting and reporting information that is not of interest to the debt, equity or insurance partners.

Each corporation should ask itself what its motivation is to aspire to better environmental performance. Is it to get a loan? To get insurance? To increase stock value? To increase profits? To avoid liability? To increase efficiency of operations? To improve corporate public image? To ensure long-term markets (sustainability)? To "do the right thing"? Many of these questions were raised in the formal and informal discussions of the UNEP Financial Institutions Initiative's Fourth Roundtable in Cambridge, UK, in September 1998. Some aspects of those discussions that relate to, and should be considered in establishing, a corporation's motivation to improve environmental performance included:

- **There is a recognized relationship emerging that environmentally pro-active corporations have higher stock performance than peer groups.** This will help the investor community increase its potential consideration of environmental performance for both risk management and increased profitability.
- **Variable pricing for environmental risk in credit transactions is not yet viable.** This supports the position that lenders, particularly the commercial banks, do not wish to use environmental risk as a competitive tool, especially when risk reduction is the primary benefit rather than tangible additional potential for profit.
- **Governments are increasingly interested in voluntary environmental management systems that focus on responsible environmental management practices.** For this to be effective, governments need to be cognizant of the vested interests of the financial community if they wish to capitalize on the use of financial incentives for better environmental performance.

Summary

Environmental performance is a growing concept with financial stakeholders, even as definitions, measurements and relationships need significant clarification. For preferential treatment by the financial services industry, corporations seeking financing should know the different sectors and appeal to their specific needs and issues. Governments and NGOs should do the same, to maximize their ability to influence the financial sector. Even as there is increasing awareness and engagement of the financial services sector, the primary benefits of environmental performance remain with the primary industries, both to their bottom line and to the environment. Ultimately, while financing availability may be a factor, environmental performance should be driven by what it does for the primary industry, not what it does for the banker, investor or insurer.

Notes

1. John Ganzi and Anne DeVries, *Corporate Environmental Performance as a Factor in Financial Industry Decisions*, US EPA Office of Cooperative Management, 1998.

2. *Tomorrow* is bi-monthly and is published in Stockholm. E-mail: info@tomorrowpub.se.

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UNEP's Financial Institutions Initiative

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Abstract

This article looks at how Lloyds, one of the early signatories of the Financial Institutions Initiative, has developed its environmental management practices in line with the UNEP Statement, and how financial institutions have benefited from membership in the Initiative. Many of these institutions have made significant changes in their business practices since the Statement was launched. The Financial Institutions Initiative provides them with a unique source of relevant information and advice.

Résumé

L'article s'intéresse à la manière dont Lloyds, l'un des premiers signataires de l'Initiative des institutions financières, a élaboré ses pratiques de gestion de l'environnement conformément à la Déclaration du PNUE, et aux avantages qu'apporte aux établissements financiers l'adhésion à l'Initiative. Beaucoup d'entre eux ont modifié de manière sensible leurs habitudes de travail depuis le lancement de la Déclaration. L'Initiative des institutions financières leur apporte une source unique d'informations et de conseils dans ce domaine.

Resumen

Este artículo examina cómo Lloyds, uno de los primeros signatarios de la Iniciativa de Instituciones Financieras, ha puesto en práctica sus operaciones de gestión ambiental, de acuerdo con la Declaración del PNUMA, y cómo dicha Iniciativa ha beneficiado a las instituciones financieras que se han adherido a ella. Muchas de esas instituciones han modificado sensiblemente su actividad empresarial desde la entrada en vigor de la Declaración. Veremos a continuación cómo la Iniciativa de Instituciones Financieras constituye para ellas una fuente valiosísima de información y asesoramiento.

Introduction

UNEP formally launched the *Statement by Banks on the Environment and Sustainable Development* in 1992 at the UN Conference on Environment and Development, the so-called "Earth Summit" of world leaders who met in Rio to agree a programme for the sustainable development of the planet. The Statement has received very positive support. As of 31 March 1999, 159 financial institutions and one associate member had signed up to the Financial Institutions Initiative.

The idea was extended to insurance and reinsurance organizations in 1995 with the launch of the *UNEP Insurance Industry Initiative for the Environment*.

In 1994, the Advisory Group on Banking and the Environment held its first international roundtable event in Geneva. Subsequent roundtable events have taken place in London, New York and Cambridge, with the 1999 roundtable scheduled for Chicago on 9-10 September.

The New York roundtable in 1997 marked five years of UNEP involvement with the financial services sector. There was ample evidence that the cooperation had been beneficial to both partners, providing a debating forum for the sector. UNEP's stewardship had been the catalyst for the emergence of a far more self-regulated organization.

There was the energy and expertise within the financial services sector to take a more directive role and to move from a small advisory group, acting under the leadership of UNEP, to an industry-led and -driven programme that could operate in full and close partnership with UNEP. The financial sector was also beginning to get its voice heard in international fora. A more formal structure was needed.

On the eve of the New York roundtable, the Financial Institutions Initiative was formally launched and its first steering group meeting was held. The new Initiative formally adopted terms of reference, along with a revised and more explicit Statement.

Awareness and interest among financial services providers had grown to the extent that there was great demand for undertaking a wider range of activities, such as the production of a quarterly newsletter to keep the sector fully informed of developments.

The Initiative's terms of reference also underline how far the process has come. As well as promoting the revised Statement, the Financial Institutions Initiative aims to promote education, research and information programmes and projects; share best practices and information; identify relevant principles and effective environmental tools; and collaborate with other UN organizations, universities and institutions relevant to the industry.[1]

Lloyds TSB and the Financial Institutions Initiative

Lloyds Bank became a signatory to the Statement in 1992. This article examines the relevance of the Statement to the bank, and also the progress made by the bank towards fulfilling its commitments to sustainable development and the environment.

UNEP Statement 1.1 - We regard sustainable development as a fundamental part of sound business management.

This apparently simple statement of commitment to sustainable development demands closer examination. What is sustainable development to a bank?

The most frequently used definition is the Brundtland definition of 1987:

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

A definition perhaps more suited to banking was offered in a report by the Green Alliance (1997) on the implementation by banks of the UNEP Statement:[2]

"Living off the interest, not the capital"

Individual banks have developed their own approach to environmental management and sustainable development. Following the merger of Lloyds and TSB Banks in 1996, the opportunity was taken to fully review environmental practices in respect of lending and internal operations, with a view to developing a harmonized approach using best practice.

A bank's impact on the environment can be dealt with under two headings, direct impact (through its own operations) and indirect impact (through lending and investment). While management of our own environmental impact is very important, we believe that it is in our core business – lending – that we can have the greatest influence. Banks should not be expected to undertake the role of environmental policemen, but they can give the right signals to their business customers: that environmental sense makes good business sense.

Lending and investment

As part of the review of lending practices, opinions were sought from those in direct contact with business customers on the application of environmental risk assessment systems and the impact on customer relationships. It is clear that customers do not appreciate anyone meddling in their business affairs without good reason. Nevertheless, environmental risks to the bank are also risks to the customer. Both parties must therefore give proper consideration to the issues.

Communication is very important. By under-

standing how our customers' businesses operate, we can gain a greater understanding of the risks to the bank in lending to them. This applies to environmental risks in addition to credit risks, which lenders traditionally feel more comfortable in assessing. By talking to the customer and observing his/her business in action, the lender can gain far more information than from examining financial statements alone.

Communication within the bank is equally important. Simply introducing a Head Office policy that environmental risks must be considered when lending to businesses will invariably fail. A policy's application is likely to be fragmented at best, even when backed by comprehensive systems and procedures, unless the lender understands what is required and, more importantly, why.

Lloyds TSB issued new environmental risk assessment guidelines to its lending officers in December 1997. This was followed by a comprehensive training programme that included over 120 workshops for lenders; an environmental risk workbook to provide all lending officers with a distance learning opportunity; and a training video. Further support is provided via a centralized helpline that lenders can contact for advice and guidance on all environmental matters.

The Lloyds TSB approach does not "red-line" any particular industry sector on the grounds of environmental risk. By working closely with business customers, and understanding the risks those businesses face and the measures they have put in place to counter those risks, the bank is better placed to assess a customer's all-round creditworthiness. The bank is encouraging customers to adopt sound environmental management practices without taking on the policing role, which is better suited to the regulators.

We consider that this approach helps us to fulfil several other UNEP Statement principles, especially:

UNEP Statement 2.3 - We recognize that identifying and quantifying environmental risks should be part of the normal process of risk assessment and management, both in domestic and international operations. With regard to our customers, we regard compliance with applicable environmental regulations and the use of sound environmental practices as important factors in demonstrating effective corporate management.

and

UNEP Statement 3.2 - We will share information with customers, as appropriate, so that they may strengthen their own capacity to reduce environmental risk and promote sustainable development.

Investment is another area where opportunities exist to influence environmental performance. Globally, environmental and ethical funds total US$ 1.3 trillion and are growing at a much faster rate than traditional funds. Investors increasingly demand a say in how their money is invested.

During the year ending 31 March 1999, nine UK ethical and ecological unit trusts comfortably outperformed the FTSE All-Share Index (source: Standard & Poor's Micropal). Lloyds TSB's Environmental Investor Fund is ranked third, and is number one on three- and five-year performance.

Development of environmental and ethical investment funds satisfies another UNEP Statement principle:

UNEP Statement 2.7 - We encourage the financial services sector to develop products and services which will promote environmental protection.

Internal operations

Banks are not readily identified as polluters. Because of the scale of operations, however, they are major consumers of energy and resources. They also produce significant quantities of waste. Commitment to the UNEP Statement requires banks to acknowledge their environmental impacts, to publish a statement of their environmental policy, and to report periodically on steps taken to incorporate environmental considerations into their operations.

At the time of the merger, environmental initiatives were undertaken by different areas of Lloyds TSB on an *ad hoc* basis. The organization centralized its environmental management in 1998, while still allowing individual functions to maintain autonomy on strategic management issues.

The significant areas covered by environmental management are property management (including energy consumption), purchasing, transport and waste management. In all of these areas environmental improvement can also lead to significant cost saving opportunities, thus providing a "win-win" scenario.

Having conducted a thorough review of environmental performance, Lloyds TSB has just published its second environmental report, which identifies nine key objectives for environmental improvement in the coming months. These include working closely with our suppliers to identify environmental impacts arising from their production processes and to identify options to use products from sustainable sources.

As with lending processes, communication is a key element of environmental management. It is important to involve all staff in dialogue, to raise their environmental awareness, and to seek their input and co-operation in environmental improvement. External communication is also important, as this leads to sharing best practices and opportunities for benchmarking.

Publication of our environmental policy statement, together with periodic reports on performance and progress, helps us fulfil another UNEP Statement principle:

UNEP Statement 3.1 - We recommend that financial institutions develop and publish a statement of their environmental policy and periodically report on the steps they have taken to promote integration of environmental considerations into their operations.

The future of the Financial Institutions Initiative

In the early stages of the UNEP Statement, being a signatory demonstrated a bank's public commitment to the environment and to sustainable development. It also provided the benchmarks by which progress could be judged. While this remains the case today, the development of the Financial Institutions Initiative has added further dimensions by which all signatories may benefit.

Regular outreach meetings are scheduled around the world, promoting the Initiative and the benefits of membership. Meetings have been held in Greece, Singapore and Italy, to name just three. Further visits are planned this year to Israel and Australia, and to Greece and Italy for the second time. Sharing information and best practices is a particular feature of the Initiative, and the bigger organizations can benefit from this just as much as the smaller banks.

Over 108 financial institutions gathered at the Cambridge Roundtable in September 1998, joined by delegates from 18 government ministries as well as representatives from business, foundations and public interest communities. Over 35 countries were represented from virtually every corner of the globe – from Mongolia and Bangladesh to Brazil and Costa Rica, and from Hungary and the Netherlands to the United States and the United Kingdom.

In the early days, lender liability and environmental risk assessment dominated proceedings. The topics debated now range from climate change, through environmental disclosure and accounting, to risk pricing and investment and asset management.

Besides the quarterly newsletter, the Initiative is also committed to producing a series of fact sheets covering relevant topics such as ISO 14001 and Credit Risk Assessment for the benefit of the world-wide banking community.

During 1998, an implementation survey of the signatories to the Financial Institutions Initiative was carried out. The results showed that the financial institutions had made significant changes in business practice since the Statement was launched. While this is encouraging news, there is no room for complacency. Future work programmes will be shaped to address identified areas of weakness.

The environment and sustainable development are now firmly established on the business agenda of all progressive companies, not least the banks. As developments to promote sustainable development and combat climate change continue to progress apace, the UNEP Financial Institutions Initiative provides banks with a unique source of relevant information and advice.

Notes

1. *Financial Services and the Environment – Questions and Answers* (1999), UNEP Regional Office for Europe, Geneva.
2. Hill, J., Fedrigo, D. and Marshall, I. (1997), *Banking on the Future: A Survey of Implementation of the UNEP Statement by Banks on the Environment and Sustainable Development*, Green Alliance, London. ◆

Environmental protection as a future factor

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Abstract
Deutsche Bank took an active role in drawing up the Statement by Banks within the framework of UNEP. Based on the UNEP Statement, environmental protection is regarded as a cross-section task within Deutsche Bank. This affects business operations, in-company activities and social commitment. As a member of the UNEP Steering Committee, Deutsche Bank would like to encourage dialogue with other banks. It has launched an initiative via the National Association of German Banks to encourage members to endorse the UNEP Statement.

Résumé
La Deutsche Bank a participé activement à l'élaboration de la Déclaration des banques dans le contexte de l'initiative du PNUE. Conformément à la Déclaration du PNUE, la protection de l'environnement est considérée à la Deutsche Bank comme une tâche recouvrant de nombreuses fonctions. Elle a une incidence sur les opérations commerciales de la banque, ses activités internes et ses obligations sociales. En tant que membre du Comité directeur du PNUE dans ce secteur, la Deutsche Bank aimerait encourager le dialogue avec d'autres banques. Elle a lancé, via l'Association nationale des banques allemandes, une initiative pour encourager les membres à approuver la Déclaration du PNUE.

Resumen
El Deutsche Bank desempeñó una labor trascendente en la redacción de la Declaración de los Bancos, creada en el marco del PNUMA. De acuerdo con la Declaración del PNUMA, el banco concibe la protección ambiental como una tarea intersectorial. Influye tanto en las operaciones financieras, como en las actividades internas de la empresa y su compromiso social. En tanto que miembro del Comité Directivo del PNUMA, el Deutsche Bank se esfuerza en fomentar el diálogo con otras entidades bancarias. En este sentido, ha lanzado una iniciativa a través de la Asociación Nacional de Bancos Alemanes, destinada a promover la adhesión de sus miembros a la Declaración del PNUMA.

In recent years environmental protection has been given increasingly high priority in industry, politics and society at large. The Rio Conference in 1992 was a major factor in demonstrating that all those concerned are called upon to continue to safeguard "future viability" by making efficient and sparing use of resources.

As early as 1992, therefore, Deutsche Bank played an active role in drawing up the Statement by Banks within the framework of UNEP. In signing this Statement, banks endorsed the principle that environmental protection and sustainable development are the common responsibility of all actors involved. On the basis of the UNEP Statement, environmental protection is therefore regarded as a cross-section task within Deutsche Bank that affects business operations, in-company activities and social commitment.

For us, assuming responsibility for the environment means starting in our own company. Since 1989, one member of the Board of Managing Directors has been responsible for questions relating to the environment. We started to set up an environmental management system in 1997, based on ISO 14001, that focuses on such areas as awareness creation and motivation, purchasing and logistics, facility management, and life-cycle and waste management.

In addition, protecting the environment is a major factor in our business policy. Especially for our customers in small and medium-sized businesses, we offer concrete products within the framework of our "db-Corporate Service: Environmental Protection" that provide assistance in recognizing and assessing risks and opportunities in the field of environmental protection. The services we offer range from brochures on selected topics, such as *Eco Audit* and *Management in Cycles*, through special risk consulting, right down to complex financing models.

For the public sector, too, Deutsche Bank offers special know-how in the implementation of sustainable development. As a result of the tight financial situation in the public sector, necessary measures relevant to the environment are increasingly being realized using innovative organization and financing methods. These require specialist knowledge, which Deutsche Bank has acquired from years of experience.

Since 1995, it has been firmly anchored in our loan principles that we do not participate in the financing of companies or projects that, in our opinion, involve significant dangers for the environment. Accordingly, even for international project financing we insist on environmental impact assessments conducted by external specialists. This is in line with our fundamental understanding of "global ethics", to which Deutsche Bank, as a bank operating at an international level, feels committed.

Over and above these activities, we encourage open exchange of experience on topical environmental questions. We are particularly proud of the "Young Europeans' Environmental Research" competition, which we launched jointly with the "*Jugend forscht*" Foundation. The aim of YEER is to strengthen the dedication of young people in Europe to the environment, and to offer young researchers a forum for scientific interaction. For this purpose, every year YEER organizes three events: the International Competition, the International Research Camp and the International Colloquium. Whether they focus on scientific competition, joint research, or discussion and the exchange of ideas, at the YEER events young scientists experience the common responsibility of their generation (of researchers) for tomorrow's environment – beyond all national borders. In the year 2000 we shall be holding the competition world-wide. This is a move which is particularly close to our heart, given the global nature of today's environmental problems.

For it is precisely those world-wide tasks that have to be performed in order to safeguard the sustainable development of our natural surroundings which call for new strategies and concepts. Only together – in the sense of a global partnership – can all those involved hope to master the challenges before them. Deutsche Bank is at pains to make concrete contributions to future viability, and to show new ways that lie between theoretical debate and the practical solution of problems.

Environmental protection as a future factor

According to the principle of sustainable development, economics, ecology and social security form an inseparable unit. Inspired by the 1987 Brundtland Commission and the UN Conference in Rio de Janeiro in June 1992, every country in the world has now accepted the fact that long-term sustainable development is only possible if the natural foundations of life are preserved for the future.

If Agenda 21, the document which came out of the Conference, is to be implemented, all of us – the state, industry, and society as a whole – are called upon to take advantage of the individual opportunities and possibilities that are offered us and go beyond the stipulated minimum standard. In other words, we must do more than just the bare minimum generally agreed on.

For Deutsche Bank, it was only natural that we should participate in drawing up the "Statement by Banks on the Environment and Sustainable

Development" (UNEP Statement) initiated by UNEP. The UNEP Statement represents a voluntary undertaking on the part of the banks signing it, which allows each of them scope for individual implementation. In joining, the banks commit themselves to act in accordance with the principle of sustainable development and to take environmental concerns into account in all their activities. The signatories have access to a wold-wide network and are kept informed about UNEP activities, such as ongoing research projects and publications on the subject "Environment and Providers of Financial Services" through *Industry and Environment* and other means.

As a member of the UNEP Steering Committee, Deutsche Bank would like to encourage dialogue with other banks on experience and knowledge relevant to the environment. For that reason, it has launched an initiative via the National Association of German Banks to encourage members to endorse the UNEP Statement. Thirty new signatories have been gained since November 1998, bringing the number of member banks to more than 160.

Responsibility for the future

In its concrete implementation, for Deutsche Bank the UNEP Statement constitutes a forward-looking factor that is regarded as a cross-section topic in our bank's overall concept, affecting business policy, banking operations, in-company activities and social commitment.

Assuming responsibility for the future has a long tradition at Deutsche Bank. For about the past ten years, one member of the Board of Managing Directors has been responsible for questions relating to the environment. Since 1997, we have been setting up an environmental management system for Deutsche Bank AG based on ISO 14001. This international standard formulates provisions for an environmental management system with the aim of implementing a process of continuous development. Consequently, it is expected that the company's environmental performance will improve. No absolute requirements apply to this environmental performance, to ensure that the system can be used in different business sectors and different countries. Units

The UNEP Insurance Industry Initiative for the Environment – bringing sustainability to the risk world

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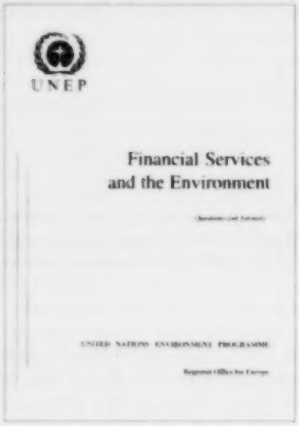
Concern about the environment is no longer an optional extra for the business community. Increasingly, financial institutions – investors, bankers, insurers – are realizing that their future depends on backing the right kind of economic development.

If infrastructure, industries, economic development and trade are not built on principles of sustainability, this is not just bad for the environment, it is also bad business. Untapped market potential for environmental goods and services is growing, and new investments are increasingly attracted to specialized funds. Increased regulation, to try to limit projects' negative impacts on the environment and greater liability for environmental degradation, has also served to bring environmental considerations to the fore in business decision-making.



In 1995, a group of leading insurance and reinsurance companies (as well as pension funds) developed a *Statement of Environmental Commitment by the Insurance Industry*. In this voluntary commitment by the sector, companies pledge that they will aim to achieve a balance of economic development, the welfare of people, and a sound environment. The Statement acknowledges the principles of sustainable development and the precautionary principle. It also calls upon insurers to incorporate environmental considerations into their internal and external business activities.

Over the past few years, insurers have increasingly acknowledged that taking environmental considerations into account in their daily business operations not only furthers stakeholder dialogues but also enhances shareholder value and makes good business sense. By March 1999, 85 companies representing 26 countries had signed onto the Statement. The most prominent area, proving the validity of the claim that environment and good business are intrinsically linked, is the climate change debate, in which the Insurance Industry Initiative was engaged as early as 1996, the year after it was initiated.

Over the past ten years, a dramatic increase could be observed in the number of disasters as well as the damage caused. In the late 1980s and early 1990s, the number of natural and man-made disasters increased significantly. The insured loss reached nearly US$ 35 billion.

The continued dramatic long-term rise in insured losses in 1998 led to a loss of at least US$15 billion, while the total economic loss was over US$ 90 billion (source: Munich Re). The reasons, besides the increase in extreme weather events, are population growth in vulnerable areas, urbanization of coastal regions, and the associated increase in wealth and in insurance coverage.

To obtain a sense of the severity and magnitude of the problem, if a weather event on the order of Hurricane Andrew (1992) hit the United States three times within one year, this could destroy the US insurance sector and lead to unforeseeable economic losses.

In addition, man-induced and man-made risks can have profound impacts on the environment, leading to unforeseeable claims and losses. An international panel of doctors ruled in March 1994 that some 400,000 genuine medical claims could arise from the Union Carbide disaster in Bhopal, India. The Piper Alpha offshore oil rig explosion in the United Kingdom in 1994 resulted in some US$ 2.3 billion in insured losses. The out of court settlement following the *Exxon-Valdez* oil spill in Alaska in March 1989 could exceed several billion dollars over and above the clean-up costs of three and a half billion dollars.

Not only are environmental catastrophes expensive, but the costs can spread far and unpredictably into the future. Just one example: the Superfund for cleaning up contaminated land, as required by new US legislation, could cost the US insurance industry more than a trillion dollars over 30 years. As the industry increasingly has to face the consequences of past environmental recklessness, it is not at all surprising that it wants to be heard now on how the international community can prevent future losses.

Insurers' risk portfolios need to be managed prudently because of underlying capital availability and liquidity requirements. Therefore, insurers tend to keep a very careful eye on loss prevention strategies and risk minimization before underwriting risks. This precautionary principle is the cornerstone of all successful insurance business activities.

The tight margins for premium calculations, due to highly competitive markets, do not allow for serious miscalculations. If weather patterns change, eventually safety standards, for example in the building industry, will need to be revised. A simple illustration explains why this is so. An increase of only 10% in the wind gust speed of a 200 km/h storm would lead to an increase in damage of 150%. No business can afford miscalculations of this order of magnitude. Premium calculation would become an unpredictable risk once the relative stability of the climate patterns shifted.

To allow for more targeted and in-depth activities, in 1997 the most active members of the UNEP Insurance Industry Initiative founded the *Insurance Industry Initiative for the Environment, in Association with the United Nations Environment Programme* (the Association). The Association funds research

which are liable for certification may be parts of a location, the location itself, or organizational units that go beyond a particular location. Due to its structure as a large-scale bank, Deutsche Bank has integrated its environmental management system in its organization and processes.

Environmental protection: a cross-section topic

Environmental management at Deutsche Bank is a cross-section topic anchored in all corporate divisions and service departments, both organizationally and in content. It is an integral part of our corporate self-understanding, and has a constantly growing impact on our corporate policy and our social commitment.

In-company environmental protection

As "clean" service companies, banks too have numerous areas where they can apply the principles of environment-friendly management. For example, in order to be able to offer competitive services and products to our more than 5 million customers in over 1500 branches in Germany, a competent infrastructure and an efficient logistics structure are essential. Our centres for trade and business processing are almost industrial in character. On peak days our computer centres handle a volume of more than DM 500 billion (Europe 255.63 billion), including approximately 20% of Germany's total foreign trade. More than 4 million transactions a day are processed – 24 hours a day, seven days a week. This means a total of a billion transactions in the course of one year. So productivity has top priority. Here, the "economic principle" goes hand in hand with the aim of working in an environment-friendly manner.

In the context of in-company environmental protection, purchasing holds a key position. It is precisely here that it is possible to control the use of environment-friendly materials and procedures well. The products listed in Deutsche Bank's electronic purchasing information system and purchasing manuals represent a high standard. Environment-friendly, recyclable or reusable articles are specially marked in the office materials catalogues. Here, commitment and a sense of responsibility play an important role.

The standards we have set ourselves in the pur-

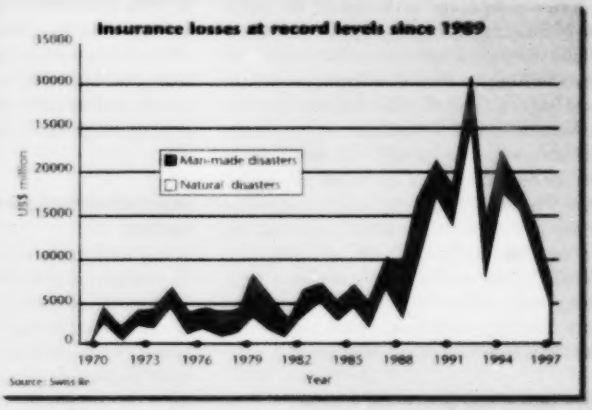
activities and sponsors awareness meetings, workshops, and the Initiative's annual regular meetings. Two standing Working Groups were formed, on Asset Management and on Climate Change. It was under the auspices of the latter that a position paper on climate change was presented at Kyoto and that the Kyoto Protocol was endorsed. In addition, the value of the agreement for the sector was further explored.

During the Third International Conference of the UNEP Insurance Industry Initiative in June 1998 in Cologne, the industry stressed that policies and measures represent the principal way to achieve greenhouse gas emission reductions. They committed themselves to contribute to this goal by making efficient use of energy and resources in managing internal operations and physical assets, and by supporting programmes directed at introducing energy efficient technologies and practices. The industry also welcomed the creation and introduction of market mechanisms such as Emissions Trading (ET) and the Clean Development Mechanism (CDM), and supported the continued operation of Joint Implementation (JI) projects. The inclusion of countries with Economies in Transition (EIT) within the umbrella of the ET scheme was considered a particularly encouraging development.

However, the insurance industry also expressed its concerns regarding the issuance of emission credits, verification procedures, and rules governing the banking of credits, "hot air" and limits to trading. Furthermore, Parties' non-compliance was a major concern that led to the conclusion that, unless these issues were clarified, it would be difficult for commercial insurance companies to define their role under the Kyoto Protocol. These and other findings were presented by prominent members of the Initiative at the fourth session of the Conference of the Parties (COP-4) of the UN Framework Convention on Climate Change (UNFCCC) in Buenos Aires. The executive summary of the study *The Kyoto Protocol and Beyond: Implications for the Insurance Industry* was presented and received considerable attention by delegates from governments, academia and the NGO community.

Another important activity of the Initiative has been the production of a working document, *Creating A Standard for a Corporate CO_2 Indicator*. This document presents a theoretical overview of how to prepare a CO_2 indicator, and develops methods and a generic framework regarding how the private sector can easily adopt the Indicator without great effort in order to calculate the company's individual greenhouse gas emissions. Based on the results of these calculations, companies are also able to identify reduction potentials. They can use the Indicator for their internal purposes to determine their short, mid and long-term developments and their management efficiency.

The format chosen is transparent and allows comparisons between companies. It supports greater disclosure requirements by industry. Organizations such as the World Resources Institute, the Coalition of Environmentally Responsible Economies, and the World Business Council for Sustainable Development are developing similar standards and comprehensive environmental indicator series. However, this CO_2 Indicator is the only one that is universally applicable and available. Governments are also



using this paper, in order to begin adapting it to their specific national circumstances. The United Kingdom has taken the lead, already producing its own national indicator built on the UNEP document. Others are invited to follow this example.

The insurance industry sees in these activities a clear business advantage: the more information and data are available on a company, the more precise premium calculations and risk assessments can be.

In signing the Statement, signatories commit themselves to report on their own environmental activities to the public, enter into a dialogue with all bodies interested in this matter, and lobby for the environment. A membership survey regarding implementation of the Statement, planned for 1999/2000, is a first step in evaluating and assessing the efforts undertaken in the sector and the effectiveness of the current commitments. Through exchange of information, sharing of best practices, and their engagement in the international environmental policy debate, insurers have taken the lead in responding to the quest for a more sustainable world. The Fourth International Conference of the Initiative on 10-11 June 1999 in Oslo, called *Natural Capital at Risk*, will be another proof of this. It will demonstrate the ever increasing efforts insurers, investment companies and pension funds put into the sector's environmental commitment.

The economic rewards of placing environmental concerns high on the agenda are considerable. Green investment is on the rise, as concerned individuals and organizations look for environmentally sound ways to invest and plan for the future. Sustainable development is a good long-term investment and a fundamental requirement for a sector that is vulnerable to environmental degradation and weather-related events.

For further information, and if your company wants to sign up to the Statement, please contact: Jens U.D. Bode, Co-ordinator of the UNEP Insurance Industry Initiative, UNEP, Division of Technology, Industry and Economics, Economics and Trade Unit, 15, chemin des Anémones, 1219 Geneva, Switzerland.

chasing division are not restricted to office materials, but cover all furniture and fixtures, machinery and equipment including the environment-friendly design of offices and conference rooms.

Aspects of facility management

In facility management, logically enough, environmental protection starts with planning. Emission protection and the minimization of resource consumption in the areas of heating, air conditioning, lighting and water are the main tasks to be implemented. In this connection it goes without saying that we make use of the possibilities offered by modern technology, such as combined heat and power or flow reducers on taps to name just two examples. In existing buildings we check for retrofitting possibilities with regard to resource-saving technologies and operate a forward-looking energy management system.

In view of the danger to the climate, the reduction of exhaust gases is another important factor in environmentally aware action. For this reason Deutsche Bank has decided, wherever possible, to avoid business trips and hold video and telephone conferences instead. Where business trips are unavoidable, we encourage use of the public transport network. But this is up to each individual's sense of responsibility. Using public transport for the trip to work, forming car pools or car sharing can be recommended to our staff, but not "decreed". Thus we try to go beyond the "work setting" with our activities in our own company and to bring about a constant increase in the environmental awareness of staff members.

Environmental protection: new accents in banking operations

Forward-looking environmental management in companies has become an important – sometimes even crucial – factor in corporate activities. It is also quite evident that environmental protection must be given high priority, irrespective of the economic situation and purchasing power.

Industry, trade and consumers are increasingly being made responsible for the entire life-cycle of a product. This means economical use of resources and avoidance of waste must be taken into account when a new product is being planned. Unavoidable residues, whether they are from packing, cars or electronic scrap, should as far as possible be recycled and thus returned to the economic cycle.

Environmental technology: yesterday's sideline becomes tomorrow's industry

The anchoring of ecological principles has significant consequences for investment and growth in our country. In the years up to and including 2005, the amount of investment required in the public sector is put at approximately DM 1400 billion. Measures to protect water bodies, waste management, wastewater disposal and the disposal of old waste account for one-third of all measures to be taken. Environmental technology, formerly a "sideline" in German technology companies, has become a major growth sector in which Germany holds a leading position internationally. For banks and their customers this means new business opportunities, new products, but also specific risks. Deutsche Bank geared itself to these new challenges at an early stage.

db-Corporate Service: Environmental Protection

Precisely for small and medium-sized companies it is not easy to obtain an overview of the increasingly complex material available on the subject of environmental protection. Unlike large companies, they rarely have their own special departments or divisions to constantly support them in recognizing and dealing with environmental risks or in taking advantage of the opportunities offered by environmental protection.

As early as 1988, Deutsche Bank approached its small and medium-sized companies with a publication called *Environmental Protection: Facts, Forecasts, Strategies* in order to draw their attention to the risks, but also the opportunities, presented by environmental protection. Today, as part of their db-Corporate Service: Environmental Protection, Deutsche Bank offers concrete modules for customers to draw on in the phases of information acquisition, decision-making and implementation.

Innovative companies: innovative service

Young high-growth companies constitute the innovation potential of our economy. In order to reinforce this potential, Deutsche Bank has set up special innovation teams operating across Germany. The aim here is to understand our customers' businesses, recognize their problems and solve them together. Whether disposal of old waste, life-cycle management, clean air preservation, water treatment or regenerative forms of energy forms, environmental matters play a key role in our society and our economy. For companies operating in this field of technology there are great opportunities for growth and earnings.

The Deutsche Bank's "Environmental Technology" innovation team, set up in the spring of 1998, makes the entire package of services provided by the Deutsche Bank Group available to companies working in the environmental technology sector.

The team of specialists works together with a network of internal and external experts for the sector concerned and develops individual financing concepts. It advises companies on all phases of management, if necessary using the services of external solicitors and tax consultants. The team draws on a concept consisting of the modules of management transfer, technology transfer and capital transfer. The term "management transfer" is used to describe the assistance offered to companies by Deutsche Bank in the form of various instruments such as guidelines on innovation management. To illustrate the current technological situation in Germany, Deutsche Bank has published the second edition of the CD-ROM "A Technological Atlas of Germany", which represents one module in technology transfer. On top of this, customers and non-customers are given access to a network of experts on the sector.

The optimal financing solution is elaborated after drawing up a convincing corporate concept within the framework of capital transfer. The possible financing concept can range from drawing on a company's various own equity sources in the form of venture capital, fund solutions and the like, through subsidies, outside capital/leasing, to project financing. For this purpose, both the range of services offered by the Deutsche Bank Group and external institutions such as venture capital companies are included.

Suppliers and problem solutions from the environment market

A further module in db-Corporate Service: Environmental Protection which should be mentioned is the Eco-select environmental database. This is a pragmatic information system containing detailed offers on technologies, and know-how concerning services, institutions and consultants from the environment market. A special keyword system makes it possible to link environmentally relevant questions rapidly and easily to appropriate solutions.

Since 1997, Eco-select has offered access to company portraits and information on offers via the Internet (www.eco-select.de), CD-ROM, Host IZ technology, fax and a manual. Eco-select enables suppliers and those looking for goods or services in the environment market to contact each other in a targeted manner.

Life-cycle management: sparing raw materials, avoiding waste

Above all, small and medium-sized companies are affected by the German Life-cycle Management and Waste Act. This Act has an deep impact on product development and production processes. In particular, companies that gear themselves to the new requirements are able to take advantage of a competitive edge and to further consolidate and extend their market position.

With the series of brochures entitled "Management in Life-Cycles", Deutsche Bank illustrates the opportunities for long-term reorientation in this area. In addition to a general introductory brochure on overall conditions and strategic orientation aids, seven sector brochures offer concrete decision-making aids on the topics of automotive component suppliers, the construction industry, the electrical and electronics industry, mechanical and plant engineering, the furniture and interior design industry, the textile industry and the packaging industry.

Public funding for environment investment

The funding instruments offered by the Länder, the federal government and the European Union have become so complex that nobody can understand them. They range from tax benefits through loans and guarantees, right down to subsidies. Our db-select and euro-select databases help clarify the prerequisites for application, as well as possibilities for use and combination. For example, euro-select stores up-to-the-minute information on more than 3100 sponsorship programmes

from EU Member States, some of which specifically target environmental investments.

In most cases, development funds and classical investment loans have to be combined. Combining the various financing modules for environmental investment, which is the optimal way to proceed with regard to flexibility and interest charges, is part of the qualified service offered by our corporate customer division.

Innovative financing concepts for municipal environmental protection

Environmental investments are inseparably connected to the territorial tasks of the federal government, the Länder (federal states) and municipalities. Due the fact that the Constitution guarantees the municipalities self-administration rights, they have not only the right but also the obligation to perform local tasks for the general welfare of the public.

The classical areas here are supplying the public with gas, water, electricity and waste disposal facilities, such as for wastewater and refuse. Accordingly, environmental investments constitute a considerable portion of all public investments. Large parts of these are accounted for by measures in the areas of water protection, waste management, wastewater disposal and disposal of old waste.

In this case, Deutsche Bank offers its special environmental investment know-how. Due to the tight financial situation of the central, regional and local authorities, environmental protection measures increasingly have to be realized using forms of organization and financing that are innovative for the public sector. In addition to leasing, these include structured financing, which is exactly geared to a project's cash flow. This requires specialist knowledge, which Deutsche Bank has acquired from years of experience.

Changing risks into opportunities

Apart from the quite obvious risks resulting from a possible threat to the environment, there is also the risk of missed opportunities. This is the risk that a company will fail to take advantage or make incorrect use of market opportunities resulting from environmental protection. A supplier that fails to fulfil the customer's ecologically demanding production standards will rapidly get into difficulties. The timely and adequate consideration of the subject of the environment, on the other hand, represents an important strategic factor in success. A producer of consumer goods, for example, that is able to convince his customers of the environmental friendliness of its products creates additional sales opportunities for itself and has the competitive edge over its weaker rivals.

Top-quality environmental management thus safeguards a company's future prospects and long-term viability.

The environment and society

Every company in which business is done by people for people is not just a economic event – it is a part of society. As far as concrete social commitment is concerned, Deutsche Bank is at the forefront: over and above our business activities, we encourage debate on environmental questions and make practical contributions to solving environmental problems.

The "Young Europeans' Environmental Research" (YEER) competition, for example, launched in 1990, is one of the largest initiatives in Europe dedicated to sponsoring young people in the areas of science and technology. It is organized jointly by Stiftung Jugend forscht e.V. and Deutsche Bank AG, in cooperation with partner organizations in 30 countries – from Iceland to Cyprus and from Russia to Portugal.

Environment knows no borders

The aim of YEER is to strengthen the dedication of young people in Europe to the environment, and to offer young researchers a forum for scientific interaction. Young people from every country in Europe who are prize-winners in a scientific or technical competition in their own country are entitled to participate. All the projects sent in must have a clear connection to the environment. They may come from the fields of natural science, medicine, economics, informatics or technology.

In the year 2000, the former European competition is to be held world-wide for the first time under the title "WYRE – World-wide Young Researchers for the Environment", in cooperation with EXPO 2000. Enlarging the competition is the logical continuation of the original YEER motto, "Environment Knows No Borders". We have to think globally and act locally. It is intended that WYRE should make an active contribution to this, and encourage dialogue and cooperation between young people.

Debt-for-nature swaps

Deutsche Bank has taken a completely different path with the so-called "debt-for-nature swaps". These are debt waivers granted to debtor countries in return for fulfilling certain conditions connected to environmental or development policy. This instrument was developed by creditor banks and environmental protection organizations in connection with the debt crisis in the Third World. To date, Deutsche Bank has made use of it twice. Funds were made available in Sudan for improving the rural water supply and reforestation; the project was accompanied by the UN Help the Children Fund. In Madagascar, Deutsche Bank claims were converted into local currency between 1989 and 1991, and again in 1994, and paid to the World Wide Fund for Nature, which used them for a project to preserve and protect the rainforests of southern Madagascar.

Population growth, resource consumption, and the world-wide increase in environmental pollution have made environmental protection a future factor in the economic and social debate. It is the aim of Deutsche Bank to build bridges between theoretical debate and the practical solution of problems by making concrete contributions, and to help further the concept of sustainable development. ◆

Working together: financing the remediation and redevelopment of contaminated properties

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Abstract

Local governments and lenders need to work together to encourage and facilitate remediation, redevelopment and full utilization of "brownfield" sites. Over the past few years in the United States, there has been a trend to develop risk-based clean-up standards and voluntary clean-up programmes that encourage reuse of such sites. Newly available liability protection offered by local governments and private insurers has encouraged this trend. Methods of financing the remediation and redevelopment of contaminated properties are considered in this article.

Résumé

Les collectivités locales et les organismes de prêt doivent travailler de concert pour encourager et faciliter la dépollution, la reconversion et l'utilisation des sites contaminés. Aux Etats-Unis se dessine depuis quelques années une nouvelle tendance qui consiste à élaborer des normes de dépollution basées sur les risques, ainsi que des programmes volontaires de dépollution qui encouragent la réutilisation de ces sites. L'apparition de nouvelles assurances responsabilité civile proposées par les collectivités locales et des assureurs privés ont favorisé cette évolution. L'article fait le point sur les modes de financement de la dépollution et de la reconversion des sites contaminés.

Resumen

Los gobiernos locales y las entidades crediticias deben colaborar para promover y facilitar la mejora, el desarrollo y la productividad máxima de los terrenos denominados "Brownfield". En los Estados Unidos, se ha instaurado durante los últimos años una mecánica destinada a desarrollar pautas de limpieza normalizadas basadas en el análisis de riesgos, así como programas voluntarios de limpieza para fomentar la utilización de esas propiedades. Esta dinámica se ha visto favorecida gracias a los gobiernos locales y a las compañías de seguros privadas, que ofrecen protección ante las responsabilidades. En este artículo se estudian los métodos para financiar la recuperación y la explotación de los terrenos contaminados.

The US EPA defines brownfields as "abandoned, idled, or under-used industrial or commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination." In simplistic terms, a brownfield is an environmentally contaminated property. Local governments and lenders need to work together to encourage and facilitate the remediation, redevelopment and full utilization of brownfield sites. The largest obstacles to redevelopment need to be removed or overcome to achieve this goal.

The most obvious impediment is the contamination itself. The costs and time involved to remediate a site to pristine environmental conditions (including the cost of the capital to finance these activities) has often been seen as prohibitive. However, over the past few years the trend in the United States has been to develop risk-based clean-up standards and voluntary clean-up programmes intended in part to encourage brownfield redevelopment.[1] These programmes have effectively reduced the cost of clean-up while still enforcing clean-up levels which are protective of human health and the environment. Programmes differ in their application from region to region and agency to agency, but are intended to facilitate the remediation and redevelopment of contaminated properties. Clean-up to a lesser level costs less.

Another obstacle to redevelopment has been potential environmental liability associated with a particular property. Historically, the typical environmental liability scheme in the United States was joint and several liability. While this scheme was effective in facilitating the remediation of contaminated properties, it effectively hindered reuse of these properties. Joint and several liability allows the government to require the clean-up of a property without proving causality, merely that the property was contaminated. This in effect was "deep pocket liability". However, when a site is remediated to risk-based clean-up levels, or the groundwater is still undergoing remediation, without liability protection any future owner or tenant of the site could incur liability. This potential liability has historically prevented the reuse of properties.

Many states have passed brownfield legislation that amends the environmental liability scheme from joint and several liability to negotiated settlements, releasing parties and their successors from liability. Some states have adopted regulatory closures that become legally binding. Another trend is the development of prospective purchaser or pre-purchaser agreements. A prospective purchaser agreement is used to insulate a prospective purchaser of property contaminated prior to the purchase from cost recovery actions for remediation expenditures associated with the property. These agreements, which are transferable with the property, serve (to some extent) to free sites that have been remediated from liability. Before these agreements, by purchasing these sites a redeveloper was potentially incurring liability for all past remedial costs. The use of environmental indemnities, insurance products and pre-purchaser agreements has allowed projects to be redeveloped in recent years.

Though the cost of remediation has been reduced by risk-based clean-up programmes, there is a second issue: the cost versus value problem. The total cost of a brownfield project consists of the cost of purchasing a site, demolishing existing structures, characterizing and remediating the site, preparing the site for construction, and building. For a project to be viable, all these costs must be less than the completed value of the property. Or, more simply, the cost of purchasing and remediating a property must be less than the clean value of the land. This may not true in many brownfield situations.

Even if there is no problem with cost versus value, there may be problems with obtaining capital and credit to finance the transaction. In a smoothly functioning economy, enterprises with productive uses for land and/or labour must have sources of available credit. Traditionally, banks and the capital markets have provided the funding necessary for construction and purchase.

Banking regulations and prudent lending standards require that moneys lent for a project or for real estate be less than the economic value of the property. The economic value of a property is equivalent to the present discounted value of the earnings expected from the use or rental of the

property. The difficulties in financing brownfields are two-fold.

The first problem is the collateral problem. Lenders in the United States are provided with broad protection from incurring direct environmental liability by many state regulations, and by the amendments to US federal Superfund and other hazardous waste laws, but there are equally broad exceptions to that protection. Lenders are not protected from third party claims or negligence claims, or in instances where the lenders exercised control. Thus lenders have been hesitant to depend on the broad protections offered by these regulatory changes. In addition, there is no protection for diminution in value. Even without considering direct liability, lenders are faced with the prospect of holding as collateral a property that cannot be sold for enough to repay the loan if the remediation does not go as planned.

The key role of the local government would be to use incentives to rebalance the economic equation and potentially provide risk-reducing support for loans if remediation insurance products are not available in the local market.

The value of a commercial property is the total rents less operating expenses of maintenance, insurance and taxes (which equals the net income of the property), divided by the opportunity cost of capital. The risk-adjusted capital opportunity cost varies over time, but it is essentially the "cap rate." The local government has little ability to impact anything in the value equation but taxes. After all, local governments cannot legislate property values. However, by reducing present and future taxes on a brownfield project, the net income from the property is increased and the value of the property is thus increased. In this way, marginal projects could be made economically viable.

Another approach would be for the public sector to further reduce the costs of remediation and redevelopment. Remediation costs *cannot* be reduced if public health or the environment would be sacrificed, but they could be reduced to the developing entity by the local government directly paying for or incurring some of the expenses of remediation and redevelopment. This could allow the remediation and redevelopment of projects where the cost of remediation exceeds the value of the land. The most expensive portion of any remediation is groundwater remediation. If local governments were to take on the responsibility and liability for regional groundwater, clean-up costs for specific sites could be significantly reduced and groundwater resources could be managed in a unified and consistent manner.

The final area where local governments can encourage and facilitate remediation, redevelopment and full utilization of brownfield sites within their jurisdiction is the development of site-specific environmental information and, where necessary, assembling of land parcels. The up-front costs of characterizing a site to determine if the cost of clean-up will exceed the land value can prevent many brownfield sites being considered for redevelopment. These "sunk" costs have effectively prevented many potentially viable redevelopment projects being considered.

Table 1
Environmental due diligence for a brownfield redevelopment

- Phase I Environmental Site Assessment (ESA) is performed to identify potential environmental contamination
- Scope of work for the Phase I ESA is to conform to American Society for Testing and Materials (ASTM) standard
- Phase II Environmental Site Characterization (ESC) is performed to document the condition of the site and determine the scope and extent of contamination
- Scope of work for the Phase II ESC is to be determined based on the environmental history of the site and general locality: this is no time to be cheap
- Remediation plan is developed and submitted to the regulators: in instances where approval depends on risk-based clean-up levels or otherwise exceeds legal limits, the regulator's concurrence is essential
- Remediation plan is approved
- Cost of remediation must be established and accounted for in the transaction structure, and an allowance for a contingency of 15-20% be made: insurance products can be used to substitute for a contingency allowance; insurance to limit the cost of clean-up is essential
- Transaction structure and documentation is to include:
  - environmental indemnification
  - warranties and representations
  - environmental liability and notification, which should be addressed in all documentation including participation agreements
  - negotiated settlements or environmental insurance products, which might be used to cap remedial costs and limit liability

Financing brownfield redevelopment

Many properties are classified as brownfields. Some have discrete problems that can easily be quantified and addressed; others are very complicated. The financing of brownfield redevelopment projects is an area where a bank or any lender can make very large and expensive mistakes. Without financing, none of these projects can move forward. The lender must be fully able to judge the risks here, because the goal is to structure a loan that does not incur additional or excessive risk for the lender. Lenders are not paid (and cannot afford) to take on all the risks of ownership for loan margin rates. Access to a technically strong staff is essential for a lender.

In addition, great care must be taken to avoid the appearance of participating in the management of the remediation, to maintain the secured lender's exemption and avoid any worker liability claims in the future. The reality is that not all lenders have the technical expertise to deal with these problems, and that only in the case of larger transactions can they afford the costs associated with financing redevelopment of contaminated properties done in the traditional way. Many of these costs are fixed to a large extent and are not dependent on the value of the finished project. Because of these factors, banks have been very hesitant to enter this market.

There are several reasons for lenders to enter this market. While the potential risks are greater, a good environmental risk management programme can control the lender's exposure, and then the returns look quite attractive. At the moment, financing brownfield redevelopment is a relatively thin market that willingly pays higher fees. Understanding the environmental condition, regulatory environment, and deal structure can allow a lender to take on less risk than the transaction is perceived to have. It is the market perception that drives the pricing. Financing the redevelopment of brownfields, and creating new jobs and facilities in older and distressed industrial areas, is truly supporting the communities. The availability of credit to purchase properties, remediate, buy equipment, etc. will help create an economic base in blighted areas. All this good can be accomplished at a profit by the technically astute lender.

There are several approaches to financing brownfield redevelopment. The first and most direct approach is to finance the projects themselves using traditional loans. The initial step in this approach (and all other approaches) is to characterize the site. Not all contaminated properties are financeable. However, sometimes this problem can be sidestepped by financing construction on a land lease or using other techniques to separate environmental liability from the property title. Pre-purchaser agreements and environmental insurance are some of the tools that can be used to reduce or remove the environmental risk from the lender. It is important to always start at the beginning, reviewing historical operations at the site. Never assume that a known problem is the only one at a site.

The steps that should have taken place before a loan is made are listed in **Table 1**. All these steps cost a great deal of money and can be a tremendous obstacle to redevelopment.

If intending to finance the land as well as the construction, the scope of contamination and potential liability must be relatively small compared to the value of the property for this approach to work. Thus, a million dollar property that is the source of contamination for a Superfund clean-up is really not useable as collateral until the site is remediated and the situation is resolved or a pre-purchaser agreement obtained. Remember that, for sites like these, there is always the potential for

liability beyond the clean-up costs. Superfund allows for treble damages, and third party liability is also a possibility. Currently there are only 1300 National Priority List (Superfund) sites in the United States, but there are estimated to be over 400,000 brownfields. Superfund is a small subset of brownfields and not the primary issue.

The size of the clean-up is not as important as the type of problem and cost-to-value relationship. A US$ 10 million clean-up on a $150 million property is often very do-able. The rule of thumb is that the downside (but reasonable) environmental liability and clean-up costs associated with any site should never exceed 40%, preferably 25% of the property value in this approach. The reason for this limit is that the customer should always have enough equity in the property to keep it. It is essential, unless the lender is interested in going into the remediation business, that the financed property represent far more value to the customer than the headache of seeing a property through the remediation process. The ultimate loan-to-value ratio on the redevelopment project can be much higher. It can be seen that the amount of equity capital required using this approach is high. The lender is essentially structuring a loan without additional total risk. For this approach to work, the clean value of the land must be relatively high compared to the remediation costs.

When financing brownfield projects directly, it is best to avoid properties that are the source of drinking water contamination. Even with the new risk-based clean-up standards, meeting drinking water standards can be fairly difficult, especially in the case of smaller chemical molecules like solvents. Current trends in risk-based clean-up standards, zones where regulatory limits can be exceeded, and negotiated settlements are changing the ways remediation is financed. Know the local regulators, and the standards currently being applied, before evaluating a transaction. Generally, avoid Superfund sites that are the source of wider contamination until after the remediation is complete or at least under way and liability assigned. Pre-purchaser agreements are always essential here. Only finance contaminated property that is a stronger than usual credit risk. The idea is to have a viable customer remediate the site during the life of the loan.

Remediation is not a science; it is an art operating in the scientific arena. In **Table 2** are listed the steps in the remediation of a contaminated property. Do not forget that this process takes *years*. Plan your loan structure accordingly. The draw-down period should mirror the remediation schedule. It is always best for amortization to have begun and a property to be performing before the loan matures. Many lenders treat a remediation/redevelopment loan as part of the construction loan. The reasoning behind keeping remediation and construction loans separate is control and timing. Different standards of control should apply to remediation and construction loans. There are several properties where construction is completed and the property's cash flow has stabilized while groundwater treatment continues. A carefully planned remediation programme need not interfere with a property's operation.

Table 2
Steps in remediating a contaminated property

- Contamination is suspected or found
- Site is characterized – scope of contamination is determined
- Risk assessment is performed to develop risk-based clean-up levels
- Remediation plan is developed and submitted to the regulators
- Remediation plan is approved
- Remediation begins:
  - soil removal
  - groundwater treatment
  - encapsulation, etc.
- Active remediation is completed
- Monitoring (usually only groundwater, but can also be for integrity of a protective cap layer over polluted soil)
- Site receives regulatory closure.

Some rules for financing contaminated property are listed in **Table 3**.

Loan structure and financing variations are another way to make the more difficult deals work. If the site characterization reveals a site with more liability than the lender is comfortable with, economic value of the site can be separated from the potential environmental liability. There are several ways to accomplish this. The first approach would be to actually separate the future use of the property from the land and groundwater by means of a carefully structured land lease, with a term that is economically appropriate – 49 or 98 years are typical. In this way, a financially viable responsible party would maintain ownership of the land and lease it (with or without an option to buy) to the property developer or end user. The difficult part here is the need for coordination with the additional party to the transaction, ensuring that the leasee does not incur any liability and that satisfactory remediation actually takes place. The economic value of the building structures is dependent on their being useable and rentable. Thus this structure must include an indemnification from the property owner protecting the lender and its customer from loss because of inability to occupy due to unforeseen environmental (or other) conditions.

Table 3
Some rules for financing contaminated property

- Low loan-to-value ratio
- Risk reduction strategies such as insurance, environmental indemnities and pre-purchaser agreements should be in place
- Environmental remediation costs and potential liability should be less than 40% of the value of the property
- The extent of contamination should be known, and the costs of clean-up fully understood
- Cost of remediation should be estimated by at least three firms familiar to the lender
- Regulators should approve remediation plan and schedule before additional funds are advanced
- Moneys should always be held in escrow and paid out as each segment of the remediation is carried out
- Careful review of all interim reports

If the responsible party is not financially strong enough to indemnify the lender, there are several responsible parties; or if the responsible party would prefer not to carry this liability on the balance sheet, environmental insurance or structured products are an option. There are six types of environmental insurance policies currently available. Several of these products can be used by lenders to confine or eliminate the risks of brownfield redevelopment. Policies can be purchased to fund the remediation. This is effectively a pre-paid, fixed cost contract to institute a remedial work plan and eliminates the need for a contingency budget. Insurance can be purchased to cap the cost of remediation, or to insure the risk that regulators will change their minds and require clean-up to pristine conditions. Most of these policies are now limited to five or seven years. Insurance to eliminate the risk of third parties being injured by contamination encapsulated on site is also available. Insurance counsel should always review insurance policies.

Another option would be to purchase the property through an assignable, negotiated settlement (pre-purchaser) with the US EPA. (This of course works only with federal oversight sites, but similar types of agreements are available from several states.) By paying an appropriate settlement amount for remediation, the owners of the site are protected from liability and a contaminated site is remediated and redeveloped. It is essential that the negotiated settlement is assignable, and that ability to occupy be assured. Otherwise, the property will have no market value.

Only the simplest and smallest of brownfield remediation projects can be financed using traditional loans because of the equity requirements. The redevelopment of larger brownfields is a complicated multidisciplinary process that can take many different paths. A second approach would be for a local government agency to assemble several parcels of land, characterize the combined site, negotiate a remediation strategy with the regulators, and execute the remediation plan. The local agency would then turn the property over to a developer, either by sale or land lease. This approach would allow each party to utilize its comparative advantage to the best economic purposes. Many of the most qualified and successful developers operate in many different locales, and they neither have nor desire to have the expertise to understand and optimize local regulations and remediation methods. Local agencies can utilize the knowledge of local conditions, environmental firms, citizen concerns and needs, regulations

and regulators to execute an efficient remediation both in cost and timing. The problem that lenders can help with is how to finance this process most cost-effectively without tying up all the financial resources of the agency in a single project.

To finance the acquisition and remediation of several parcels in the United States, one option is a variable rate demand note. This demand note is a vehicle that has been used successfully in the tax-exempt market since 1980. It is designed to appeal to institutional investors, particularly tax-exempt money market mutual funds, which are today among the largest buyers of privately placed debt.

By issuing a demand note, the issuer will create a note obligation that will be privately placed with institutional investors. A demand note offers an attractive rate to the issuer, while providing several advantages for the purchasing investor in the areas of liquidity and yield.

In this way the remediation risk can be taken on by those best able to cope with it, the local agency, and the ultimate redevelopment can be financed using traditional financing sources and approaches.

Yet another method of approaching the financing of a brownfield remediation and redevelopment project would be for a locally operating corporation to remediate and redevelop property that it owns or acquires for its own use. This is what the Chiron Corporation in Emeryville, California, accomplished.

The example of the Chiron Corporation

This project is located in Emeryville, on the east side of San Francisco Bay. It encompasses 25 acres consisting of a former utility-owned site and two additional parcels. Historic uses included pipe wrapping (coal tar and asbestos-containing fabric) on soil, and storage and repair of electrical capacitors and transformers both on and off concrete pads, which were added in the 1950s. Part of the site was a racetrack, a warehouse, and then a laboratory facility (including a small tank farm) operated by a major oil company in the 1950s.

Chiron Corporation is an international biotechnology company engaged in research, development and manufacture of products that diagnose, treat and prevent human disease. Because of the steady pace of its business expansion, Chiron, which was founded in Emeryville, embarked on the consolidation and expansion of its facilities there. This was part of a 20-year plan. Phase I of the redevelopment involves construction of a research/pilot plant centre, power plant and parking.

Despite previous work, Chiron agreed with the state agency to targeted and random sampling of the bulk of the site surface area, to more fully characterize the site and develop a comprehensive remedial plan. PCBs, metals and arsenic were found in the soil, and solvents and hydrocarbons in the groundwater. This was the first step in a risk-based voluntary clean-up programme. It is to be noted that previous remedial work was performed in a piecemeal fashion and had left considerable contamination on-site.

The next step was for Chiron to develop a remediation plan. This plan called for the removal of 30-40,000 cubic yards of soil, removal of free product in the groundwater, removal of the remaining tanks, groundwater monitoring, and a risk management plan for construction workers. The third step was for Chiron to develop a level of oversight and control agreement with the regulators. In this way they could handle any unexpected findings without stopping construction work and could economically proceed with the construction. Chiron performed a risk assessment to develop site-specific, risk-based clean-up levels that could be economically achieved and protect human health. During the later stages of the last two steps, Chiron began its search for financing.

Ultimately Chiron was able to finance 100% of the construction costs, which exceeds the appraised completed value of the property because of the structure of the transaction. The loan was structured as a financing lease to the corporation, in which the corporation sold the buildings and then leased them for its own use, together with a surface land lease. In this way the bank group was able to separate the economic value of the property from the environmental liability. Chiron maintained title to the land, and with it all of the environmental liability. The bank group, while giving Chiron the tax advantaged borrowing of a financing lease, was able to avoid environmental liability. An environmental indemnity from Chiron and a short-term guarantee from another international corporation, which would cover the construction period, further enhanced the deal. Chiron used the borrowing power of the corporation to obtain the financing; the project would not have been possible if it had not had this corporate borrowing power.

The largest obstacle to overcome with the bank group was the concept that some residual levels of the contamination would be left in place and that the groundwater affected with various hazardous substances, which has no potential beneficial use, would remain for the most part unremediated. Ultimately, the banks got comfortable with the idea that once the buildings were built, it was extremely unlikely that Chiron would ever be required to tear them down to perform additional remediation. The groundwater issue was put to bed by costing out a groundwater treatment system for the site should remediation of contaminated groundwater ever become necessary. The banks were also able to get comfortable with the fact that Chiron could afford the remediation. The guarantee from the second corporation would cover the banks' highest risk period.

The true genius of the transaction was Chiron's ability to obtain community support and navigate the complex regulatory approval process in a timely manner. The development of a practical and cost-effective risk-based clean-up plan and its execution are what truly made the deal financeable. Chiron brought together lenders, local government and regulators to produce a benefit to the community and the company.

Locally operating manufacturing companies have the resources and expertise to negotiate the complicated multidisciplinary process of executing a large brownfield redevelopment project. The same approaches could be utilized to remediate and redevelop a site for which the corporation was the responsible party, in order to ultimately sell or lease the redeveloped site to others.

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Note

1. Risk-based clean-up standards use an assessment of risks to human health, determined from the specific characteristics of a particular site, to set clean-up levels for that site that may be greater than the rigid – and often unachievable – limits specified by regulations. ◆

The role of Grameen Bank in community development and environmental improvement

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Abstract

This article reviews the history of Bangladesh's Grameen Bank. Grameen recognizes the importance of sustainable development in alleviating poverty, which can itself be seen as a major pollutant. In every aspect of the bank's operations there is a conscious effort to improve the ecological conditions of life (including provision of better housing, food and drinking water, and sanitary conditions). Grameen's projects include development of environmentally friendly agriculture, renewable energy sources, afforestation and cotton recycling.

Résumé

L'article retrace l'histoire d'une banque bangladaise, la Grameen Bank. Grameen reconnaît l'importance du développement durable pour faire reculer la pauvreté, qui peut être considérée comme un « polluant » majeur. Dans toutes ses activités, la banque s'efforce d'améliorer les conditions de vie affectées par l'environnement (notamment le logement, la nourriture, l'eau potable et les conditions sanitaires). Elle a plusieurs projets, parmi lesquels le développement d'une agriculture respectueuse de l'environnement, l'exploitation d'énergies renouvelables, le reboisement et le recyclage du coton.

Resumen

En este artículo se hace una recapitulación de la historia del Banco Grameen de Bangladesh. El Grameen reconoce la importancia del desarrollo sostenible para la erradicación de la pobreza, que de por sí puede considerarse un agente contaminante importante. En cada una de las operaciones del banco se observa su empeño consciente por mejorar las condiciones ecológicas de la vida (facilitando un alojamiento mejor, comida y agua potable, unas condiciones sanitarias adecuadas, etc.). Entre sus proyectos, cabe destacar el desarrollo de una agricultura respetuosa del entorno, energía renovable, la reforestación y el reciclaje del algodón.

Environment and sustainable development

Sustainable development involves finding a balance between environment and development. The pursuit of sustainable development relates to environmental management. It entails preventing the undesired effects of human activities that can cause such effects. Until very recently, the cost of deteriorating environmental quality did not receive much attention during the decision-making process. However, development has been greatly affected by environmental degradation due to diminished productivity of land through soil erosion, water logging and salinity, biodiversity loss following deforestation, and reduced fish catch resulting from water pollution.

Profit-oriented financial institutions in Bangladesh generally conduct their business without giving any consideration to environmental issues. Grameen Bank, which conducts its business for the sake of developing the poor community and improving the environment, is the only exception.

Origin of Grameen Bank

Bangladesh, with an area of a 144,000 square kilometres, emerged as an independent country in 1971. It has a population of 120 million (85% of which lives in villages). Extensive unemployment, half-unemployment and natural disasters have gradually pushed the major portion of the people to the state of severe poverty: 50% are regarded as landless and near landless, 29% do not own any land, and the 50% who own less than 0.5 acre of cultivable land may be considered as functionally landless. These landless come from a very poor economic background. The major constraint they face is lack of financing. They obtain their working capital mainly from local moneylenders. Institutional credit is inaccessible to them, as they cannot provide the collateral a bank would require.

The word "Grameen" means "village" in the Bengali language, and village almost always indicates poverty. Among the have-nots, women are the poorest sector. Grameen Bank (Grameen) is a specialized credit institution for the poor. The idea was initiated in 1976 by Professor Muhammad Yunus, a Professor of Economics at Chittagong University. In view of the limitations of the traditional banking system, Grameen was launched as a project with the objective of designing an organizational framework to provide credit to the landless without collateral. Professor Yunus reasoned that if financial resources could be made available to the poor on terms and conditions that were appropriate and reasonable, "these millions of small people with their millions of small pursuits, can add up the biggest development wonder."

Grameen therefore had the following specific objectives:

1. to extend banking facilities to poor men and women;
2. to eliminate exploitation by money lenders;
3. to create self-employment opportunities for the vast unutilized and underutilized manpower resource;
4. to bring disadvantaged people within the fold of an organizational format they could understand and operate, and in which they could find socio-political and economic strength through mutual support;
5. to reverse the age-old vicious circle of "low income, low savings, low investment, low income," into an expanding system of low income, credit, investment, more income, more credit, more investment, more income."

On 2 October 1983, Grameen became an independent bank through the promulgation of a Government Ordinance. Now 88% of the paid-up share is to be held by the landless borrowers and 12% by the Government. The Board of Directors, the highest policy-making body, consists of 13 members, nine of whom are elected from among the borrowers (share holders) and three from the Government. Professor Yunus, the Managing Director, is the chief executive. Various activities of the bank are organized and implemented by four tiers of administrative set-up: branch office, area office, zonal office and head office.

Loans are made to landless men and women who must form themselves into groups of five in order to receive loans for which no collateral is required. Group members would be like-minded people with a similar economic and social background. Any person whose family owns less than 0.50 acre of cultivable land, and the value of whose family assets together does not exceed the market value of one acre of medium quality land in the area, is eligible for a loan.

Loans are repaid in weekly installments at the village meeting. A bank employee attends the weekly meeting to collect these installments and receive deposits. The basic principle of Grameen is that the people will not come to the bank. The

Professor Muhammad Yunus, founder and Managing Director of Grameen Bank, with Grameen borrowers

bank will go to the people instead. The usual size of a weekly instalment is 2% of the total amount of the loan. Loans are given for income-generating activities at an interest rate of 20%. Loan utilization is very closely supervised and the entire operation is effectively monitored.

To ensure that ownership of the bank remains in the hands of the poor, and to provide capital for future growth, it is compulsory for each group to buy shares in Grameen when the savings in the group fund has reached 600 Taka. The group concern is obliged to buy shares in the amount of 500 Taka (i.e. five shares at 100 Taka). Each member is entitled to buy only one share. Grameen did not want to be dependent on the concessionary financial assistance of donor agencies. It has diversified its dependence on donors, and has taken a number of steps to mobilize internal resources in order to become self-reliant. It also raising money from the local market.

Poverty alleviation

Grameen is working for poverty alleviation. Loans are given for a variety of purposes, grouped into eight broad categories: (a) processing-manufacturing, (b) agriculture-forestry, (c) livestock-fisheries, (d) services, (e) trading, (f) peddling, (g) shopkeeping and (h) collective enterprises. The major portion of loans have gone to livestock and fisheries, followed by agriculture and forestry, processing and manufacturing, and trading. The rate of recovery remains excellent, at 98%.

Grameen has completed 20 years of operation and covered 2.3 million families, meaning one-tenth of Bangladesh's total population. A large number of borrowers have gradually improved their economic condition to a more sustainable one. Every year Grameen evaluates its work according to whether the socio-economic situation of Grameen members is changing or not. Grameen uses its own set of indicators for poverty alleviation, in the context of Bangladesh. These indicators are:

1. Members and their families are living with dignity in a tin-roofed house and sleep on cots or beds instead of the floor.
2. They use water from tube wells, installed individually or jointly with others.
3. All members' children who are six and above, and physically and mentally fit go, attend school.
4. Members' minimum weekly loan instalments are only taka 300.
5. All family members use a hygienic and sanitary latrine.
6. Family members have sufficient clothing for daily use. They have winter clothes to protect them from the cold, as well as mosquito nets.
7. There are arrangements for growing vegetables or planting trees, etc. on the homestead in order to earn additional income to improve the family's economic condition and, at the same time, enable them to pay their loan instalments out of their income.
8. Members have not willingly failed to pay a loan instalment or failed to repay loans in due time or become overdue during the last three years.
9. Members have the ability to feed their families three square meals a day throughout the year.
10. All family members are conscious of health issues. There is the ability to take immediate actions for proper treatment, including defraying medical expenses in the event of the illness of any family member.

Every year Grameen evaluates its members using these ten indicators.

Grameen's social agenda

Grameen has evolved a social development programme called "The Sixteen Decisions" for capacity building among the poor. The Sixteen Decisions are:

1. We shall follow and advance the four principles of Grameen Bank – Discipline, Unity, Courage and Hard Work – in all walks of our lives.
2. We shall bring prosperity to our families.
3. We shall not live in a dilapidated house. We shall repair our houses and work towards constructing new houses as early as possible.
4. We shall grow vegetables all year round. We shall eat plenty of them and sell the surplus.
5. During the plantation seasons we shall plant as many seedlings as possible.
6. We shall plan to keep our families small. We shall minimize our expenditures. We shall look after our health.
7. We shall educate our children and ensure that we can earn enough to pay for their education.
8. We shall always keep our children and the environment clean.
9. We shall build and use pit latrines.
10. We shall drink water from tube wells. If this is not available, we shall boil water or use alum.

Grameen Bank update, November 1998

Item	Number	Item	(US$ million)
Branches	1128	Cumulative amount disbursed	2,612.17
Villages	38,951	Amount disbursed during this year	41.86
Centres	66,581	Cumulative amount of housing loans	178.49
Members	2,364,755	Housing loans during this month	3.20
Female Male	2,240,139 124,616	Cumulative savings in Group Fund	192.76
Cumulative number of houses built with Grameen housing loans	482,531	Total savings (excluding Group Fund)	16.70

11. We shall not accept any dowry at our sons' weddings. Neither shall we give any dowry at our daughters' weddings. We shall keep the Centre free from the curse of the dowry. We shall not practise child marriage.
12. We shall not inflict any injustice on anyone. Neither shall we allow anyone to do so.
13 We shall collectively undertake bigger investments for higher incomes.
14 .We shall always be ready to help each other. If anyone is in difficulty, we shall all help him or her.
15. If we come to know of any breach of discipline in any Centre, we shall all go there and help restore discipline.
16. We shall take part in all social activities collectively.

All Grameen members, as well as the staff, know these decisions and pursue them. They address clients' basic needs and can influence other aspects of life. While credit is an efficient instrument that can quickly augment income, poverty has many dimensions, since the poor have to fight battles on a number of fronts. To cope, there is the need to:
(a) raise the social and political consciousness of newly organized groups;
(b) focus increasingly on women from the poorest households, whose urge for survival has far greater bearing on the overall development of the family;
(c) encourage their participatory involvement in planning, implementing and monitoring, social and physical infrastructure projects, i.e. basic housing, sanitation, safe drinking water, children's education, family planning, homestead gardening for improved nutrition, and a cleaner environment. The subject matter of the Sixteen Decisions has become the major focus for a comprehensive process of change.

Deterioration of the environment in Bangladesh

The environment in Bangladesh is gradually deteriorating for man-made and natural reasons. Cyclones, floods and tidal surge are the natural causes, while large-scale destruction of trees, indiscriminate use of chemical fertilizers and pesticides, chemical waste from mills and factories, and black smoke from defective motor vehicles are man-made causes that are doing great harm to the environment we live in. Many villages are now bare of trees. Birds are becoming rarer every day, and the air in towns and cities is becoming more and more polluted.

Bangladesh is a country with deltaic characteristics which is especially vulnerable to world-wide environmental deterioration. The effect of climate change will be particularly disastrous, as unabated global warming leading to sea level rise in the next century will submerge vast areas of coastal land and significantly increase the level of salinity.

Within the country's boundaries, as various studies show, environmental degradation is taking place at a rapid pace in agriculture, industry, transport, housing, etc. Briefly, the practices contributing to destabilization of the environmental balance are indiscriminate use of fertilizer and pesticides in agriculture, untreated effluent from industry, vehicular emissions, unsanitary disposal of solid waste and overuse of groundwater. The process of land degradation and deforestation is accelerated every year, and 6-10% of forest cover is lost together with rising salinity and water logging of cultivated land. The riches of flood plains, fisheries and wetlands are being seriously depleted by both environmental degradation and human intervention.

Poverty and the environment

Poverty adversely affects the environment and interrupts the continuous process of development. It greatly hampers agricultural production. Agricultural land is being expanded by removing mountains or hillocks. Forest resources are being destroyed to provide cooking fuel. Destruction of land is increasing. Unplanned housing and the silting up of rivers, canals, marshland, etc. damage the environment. Carbon dioxide is accumulating due to extensive fossil fuel use and the destruction of forests for expansion of agriculture to meet poverty.

Natural calamities, epidemics and malnutrition are always found where there is poverty. While the amount of land does not increase, the population does. Food production does not grow proportionately with population. People are destroying the balance of the environment by not following scientifically coordinated or harmonious practices for increasing agricultural production which would eradicate poverty. The water level is falling due to irrigation, resulting in the creation of desert. Continuous population increases add to the poverty that is already putting colossal pressure on the environment, the disastrous result of which can be better perceived than described.

Grameen's role in regard to the environment

Grameen gives importance to sustainable development for poverty alleviation. Natural wealth has come to be a national asset. Saving national wealth is a sort of big investment.

If poverty is looked at as a major pollutant, Grameen has been working towards reducing this pollutant in a society that has suffered due to environmental degradation. In every aspect of Grameen's operations, one can witness the conscious effort being made to improve the ecological conditions of life. Grameen's Sixteen Decisions tell the story in a nutshell. Grameen attempts to encourage and motivate its members to have better housing, better drinking water, a cleaner environment, more plants and trees, better sanitation and health. These are being supported by Grameen with specific credit programmes, i.e. loans for housing, sanitary latrines and hand (manually operated) tube wells.

Agriculture sector

A million Grameen members are directly involved in agriculture. Grameen is trying to establish environment-friendly sustainable agriculture as an alternative to uncertain toxic and chemical practices. Excessive dependence on paddy cultivation has negative environmental consequences. The necessary input of agro-chemical fertilizer leads to aquifer pollution and has adverse effects on the micro-nutrient concentrations in the soil. More use of compost and green manure is necessary and must be organized. It is also important to introduce Integrated Pest Management (IPM). Grameen provides training to its members in order to create awareness of the negative effects of using chemical fertilizers and pesticides.

Renewable energy development

Population increase and growth of industry have resulted in greater demand for energy world-wide. Most of this energy is derived from fossil fuels (coal, gas, oil) and will soon be depleted. In Bangladesh, whose economy is predominantly agro-based, bio-fuel is mostly used for cooking in rural areas. On the other hand, lighting needs are met with kerosene. In this context the need to develop renewable energy sources has taken on greater importance and urgency. Over the years significant technological advances have been made regarding renewable energy, especially in the field of solar photovoltaics (PV), wind energy and biogas technology.

Decentralized solar power is a low-cost, environment-friendly energy source whose supply is unlimited. Bangladesh has plenty of sunshine that can be used to generate cost-effective solar electricity for rural households. The obstacle of non-electrification prevents Grameen members, as well as other rural people, from earning at their full potential. With electricity, many micro-enterprises could become more lucrative through:

- extending working hours;
- extending selling and shopping hours in rural areas;
- increasing income;

- helping households to become productive;
- facilitating children's education, women's welfare, recreational activities, and income generation by rural households.

The rural population had installed 607 solar home systems up to January 1999 with an installed capacity 27.87 KWp. Grameen has a plan to install 5400 within the next three years.

Environment-friendly wind power is an abundantly available resource that is probably the cheapest energy source in the world. Grameen has installed two wind turbines in coastal areas to produce electricity. The objective is to provide electricity, so that members will be able to start micro-enterprises and increase their profits through expanding production. Four hybrid power stations have been installed at Grameen's cyclone shelter in Bangladesh's coastal belt. It is expected that the coastal population will benefit from this project, and that it will be a basis for utilization of wind energy on a commercial scale.

The concept of an integrated farming system making use of bio-digesters is quite relevant to agriculture in Bangladesh, as it ensures increased production on a more sustainable basis and benefits the poor. Integrated farming is both environment-friendly and economically profitable, as it reuses bio-materials on a continual basis at relatively low cost with prospects of higher yields. This process takes into consideration the natural demand of the soil to increase its productive capacity. Grameen has constructed 30 bio-digesters to produce cooking fuel (bio-gas) and organic fertilizer. It is planning to promote the bio-digester as an avenue to increase family income in rural areas.

Planting and awareness building

Environmental awareness is growing throughout the world. Grameen is also active in this regard. It is continuing its efforts to protect the environment through undertaking various programmes. Afforestation is one of the most important. Grameen has taken measures to protect and preserve the environment. Large-scale planting and awareness building are among the measures being taken. Grameen distributed several million plants to its members for planting to preserve the environmental balance. Every planting season, Grameen collects plants and distributes them to members. It also distributes large numbers of plants following natural disasters that destroy trees. It has made loans for nursery encouragement.

Health and nutrition

Improper housing conditions are fouling up the environment. Unplanned housing is filling up low-lying areas. During the time it takes to build houses, open defecation or use of hanging latrines etc. are common practices that threaten health and the environment. Grameen has taken immediate steps to protect and improve the environment. All its members have resolved to keep their premises clean. An effort has been mounted to generate mass environmental awareness. Grameen makes loans to purchase homestead land and build new houses. This programme, which started in a very small way in 1984, has expanded rapidly since the devastating floods of 1987. Every house must have a sanitary latrine with five rings. Sanitary latrines are being supplied by the Grameen house-building materials project, located in different areas where the bank operates. To supply pure drinking water, Grameen makes loans to its members to purchase hand tube wells.

Recycled cotton

Garment production is an important export-oriented industry in Bangladesh, where there are now approximately 2000 facilities. These facilities generate waste clothes from production that are hazardous for the environment. Grameen decided to use the waste clothes in recycling cotton to make quilts. It has taken a "Low Cost Quilt Distribution Programme" to members and their families. Recycled cotton-made quilts protect them from the cold. Grameen had a plan to make 50,000 quilts for its 1998 distribution programme; in the meantime, 40,000 have already been distributed. The cost of each quilt is only around US$ 4.00.

Grameen functions to establish a self-dependent society. Its various activities protect and preserve the environment through poverty alleviation. Without freedom from poverty, the world will not be a peaceful and sustainable dwelling place.

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Financing the environmental sector

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Abstract
This article investigates some of the issues surrounding private sector financing of the environmental sector in terms of how the sector is perceived, some of the problems it faces from a financial perspective, and new instruments and problems. Some environmental sector companies may be trying to initiate basic changes in existing systems that would require using new or different financial instruments. Policy measures are proposed which could help this sector attract investment and develop its full potential.

Résumé
L'article s'interroge sur quelques-uns des problèmes que pose le financement du secteur de l'environnement par le secteur privé, notamment la façon dont est perçu ce secteur, les problèmes qu'il rencontre sur le plan financier, et enfin les nouveaux instruments et problèmes. Certaines entreprises du secteur de l'environnement tentent peut-être d'apporter aux systèmes existants des changements fondamentaux qui exigent l'emploi d'instruments financiers nouveaux ou différents. Des mesures sont proposées pour aider ce secteur à drainer les investissements et à développer pleinement son potentiel.

Resumen
En este artículo se investigan ciertos aspectos ligados a la financiación del sector medioambiental por parte del privado y relativos a cómo se percibe el primero, los problemas a los que se enfrenta desde el punto de vista financiero, los nuevos instrumentos disponibles y los obstáculos a los que podría enfrentarse. Cabe la posibilidad de que algunas empresas del sector medioambiental estén intentando introducir modificaciones en los sistemas existentes que requieran el empleo de instrumentos financieros nuevos o diferentes. Se proponen a continuación medidas normativas susceptibles de contribuir a polarizar las inversiones y desarrollar todo su potencial.

Perception of the sector

The financial market's willingness to support and finance the environmental sector will depend on its perception of the risks and rewards involved. Here the picture is very mixed. There is increasing recognition of the sector's high growth potential, but this is offset by caution caused in large part by disappointing experience in recent years.

Future potential: high growth

Two factors that will encourage the financial industry to focus resources on a sector are a substantial size and above average growth prospects. There is plenty of evidence to suggest that the environmental sector meets these requirements. For example, the 1997 survey by Helmet Kaiser Unternehmensberatung (HKU), "The Reorientation in the Environmental Technology Industry", concludes that this is set to be one of few major growth industries over the next 13 years (**Table 1**).

The survey was restricted to the "traditional" environmental sector: companies that work with industry and local authorities to reduce their impact on the environment. Key members of this sector are large water companies, businesses specializing in waste management, and recycling and environmental technology companies that monitor and clean up various forms of pollution. The traditional environmental sector is very much tied up with the public sector, in that regulations often determine the extent of market opportunities and the sector's development. In the water and waste industries, the public sector is also often involved as a customer and even a competitor. The sector is generally capital intensive and technologically orientated.

The same growth story also applies to what can be called the "green pioneers". These are companies in various areas of economic activity with a very different approach to environmental issues to their industry norms. Most pioneer industries represent niches within a broader industry (organic farming within agriculture, renewable energy in the power sector, eco-tourism in the travel industry). Prospects for growth appear very good for many of the green pioneers: demand exceeds supply in organic agriculture; the EU is committing itself to substantial increases in renewable energy, and the industry is expanding globally 15 to 25% each year; and eco-tourism is the fastest growing market segment of a high-growth industry. A word of caution, though: the green pioneers can be vulnerable as niche players – once they have developed a market, mainstream competitors can move in and take it over.

Historic performance: disappointment

In spite of its excellent potential, the sector has often performed poorly to date, particularly in terms of the equity markets. To illustrate: the value of Clerical Medical's Evergreen Fund grew by 37% in the five years to May 1997, while the UK's FTSE 100 Index advanced by 67%. The fund was notably limited to a strict interpretation of companies in the environmental sector, rather than the broader approach of its more successful competitors.

There is a similar picture at the corporate level: the share price of CFF in France fell by more than 75% in the early 1990s because its iron and aluminium recycling activities were hit by low commodity prices for metals. Bimec in the UK found that a decline in the environmental engineering market, after a period of over-expansion, meant there were no financial resources to face a recession. It went bankrupt in 1993. Kenetech, a US wind energy company (one of the few listed renewable energy companies), was seen as an exciting growth stock, but over-expansion and a collapse in the US wind energy market led to bankruptcy. Such examples are extreme, and clearly there are many success stories. Nonetheless, they cast a deep shadow over the sector from the perspective of financial institutions, highlighting the risks involved and making it easy for sceptical financial institutions to focus elsewhere.

Specific problems in environmental sector companies

Normally, high growth (in terms of a sector's proportion of GNP) would be expected to produce good investment returns. The fact that in many cases the environmental sector has failed to do so suggest the existence of significant problems. Experience elsewhere suggests these are likely to be in areas such as excessive competition, poor management or unpredictable changes (e.g. in technology or legislation). More specific analysis identifies six key problems in the environmental sector and indicates possible responses.

1: Vulnerability to policy developments

Problem: Many companies in the sector are particularly linked to public policy. Unpredictable policy development means that companies can fail to fulfil their potential through no fault of their own, and particularly penalizes progressive companies seeking to anticipate such development. Even when policy is developed, the long delay between the announcement of legislation and its effective enforcement creates uncertainty.

Response: Those involved in the public policy process need to be fully aware of the consequences of their actions. In particular, policy "over-reach" is to be avoided. Adequate communication of the effects of legal changes is needed, along with their consistent and timely implementation.

2: "Eye on two balls"

Problem: Many companies in the sector may be driven partly by environmental goals – the desire to "save the planet". While in theory entrepreneurs should recognize that their financial success is essential if they are to achieve their environmental goals, in practice conflicts often appear to arise with the demands of financial performance. This may mean failure to bring in key business expertise or unrealistic over-expansion.

Response: Identify opportunities to train and educate environmental entrepreneurs in good business practice and in working with the financial markets.

3: Public perception

Problem: The environment is an emotional subject. Hyped-up expectations, allied with "fads" (by investors, consumers, media and the companies themselves) lead to backlashes when exaggerated expectations are not met. Indeed, certain companies have traded on image rather than genuine environmental performance.

Response: Information and education, especially for companies and the financial sector. Engaging the media so that the appropriate message is disseminated in a pragmatic and orderly manner.

4: Eco-efficiency and changing business practices

Problem: Many environmental companies have based their business on handling industry's waste. However, industry is now pursuing eco-efficiency and actively seeking to reduce waste, eliminating key markets for the environmental sector. (Conversely, end-of-pipe waste management systems do not become outmoded in a day, so markets move at an unpredictable rate.)

Response: Encourage the sector to move upstream and understand its customers' priorities; educate financiers about the potential of eco-efficiency and potential for waste reduction.

5: Front-line

Problem: The sector's high-profile presence and close relationship with the environment can be a dubious business benefit. More is often expected of environmental companies. Regulators often target them rather than the upstream perpetuators of environmental damage (as in the case of Anglian Water and Severn Trent in the UK, who have had to spend some £900m on lowering nitrate and pesticide levels in drinking water originating from industrial agriculture). Consequences include diversion of management's time, additional operating and capital expenditure, and concern over potential liabilities.

Response: Development of appropriate policy mechanisms which do not allow such companies to become a "sink" for environmental concern ensure that they can implement the "polluter pays principle", too. Education of the public, the media, regulators and markets, and long-term approach by investors.

Table 1
Projected growth in the environmental sector (DM billion)

Year	Western Europe	Eastern Europe	World total
1997	217	51	686
2010	316	115	1100
Growth	46%	125%	60%

Source: Helmet Kaiser Unternehmensberatung (1997)

6: Centrality of public finance

Problem: Many environmental companies may depend on public finance, especially small and medium-sized enterprises, e.g. for research grants. While useful, such finds are not without drawbacks. Companies may have difficulty learning about the availability of these sources of finance, as well as problems applying for them. Successful applicants can become dependent on such sources of grant money, which often stops before companies are ready to attract private capital – a process termed the "the valley of death" by some observers.

Response: Develop improved communications strategies to inform companies about funds available. Integrate and streamline application procedures. Consider the use of financial intermediaries. Develop mechanisms to arrange a handover to private sources of finance at the end of such programmes.

Financial instruments

In theory, the environmental sector has access to most financing instruments available from commercial banks and investors. However, the specific problems discussed above indicate that the sector may at least need help in accessing sources of finance, in terms of improving preparation before talking to the financiers and by helping to change the negative perception of financiers. However, some of the sector's problems are such that they may be best addressed by a focus on relatively new forms of finance or by innovation in applying and structuring existing financial instruments. This need for a degree of innovation may also be indicated by the fact that environmental sector companies could be trying to change an existing system, which might result in difference in scale, organization or cash flows that require the use of new or different financial instruments. Thus there are number of new or established financial instruments that are particularly relevant to environmental sector companies. The most relevant are listed in Table 2.

Project finance

Project finance can be an effective way of providing infrastructure funding. It involves investment in specific, stand-alone projects, with only limited recourse to outside parties if the project runs into difficulties. In the environmental sector, projects can involve water, renewable energy and waste management (eco-tourism facilities and public transport systems can also be project financed). Project finance normally depends on a key contract to supply or charge for the services provided (e.g. power or water). Negotiating a viable and robust contract can be difficult and controversial, particularly in sectors like water where it may result in increased consumer costs. If these contracts are secure, there can be some flexibility over ownership of the facility – such as build-own-operate-transfer (BOOT) structures. There has been growing interest in developing countries in project finance.

One key issue for the environmental sector is the need to achieve a certain scale. To justify the transaction costs involved, project finance normally requires sums of ECU 20m and above. This can restrict its applicability in areas such as renewable energy where few projects reach this size.

Leasing

Leasing is the provision of finance to acquire a piece of capital equipment, with the finance secured by title to the equipment. It is a highly flexible form of finance used throughout business to finance everything from photocopiers to aircraft. Leasing works best where the equipment is moveable and saleable, although it has been used more generally. It can be regarded as a form of sales financing – i.e. it helps a company's customers buy its equipmen . Leasing has been used to buy various sources of environmental technology, from monitoring equipment to wind turbines, but no leasing companies specializing in environmental technology have been identified. Leasing can be particularly effective if it is combined with tax advantages such as accelerated capital allow-

Table 2
The most relevant financial instruments for environmental sector companies

Financing type	Target activity	Scale	Service
Project finance	Projects	Large	Mainstream
Leasing	Projects/sales	Micro-medium	Mainstream
Ecological/ethical banks	Projects (some ventures)	Small	Specialist
Venture capital	Ventures	Medium	Mainstream
Initial public offerings	Ventures (utilities)	Large	Mainstream
Rights issues, bond issues	Ventures, utilities	Large	Mainstream
Environmental sector funds	Ventures or projects	Medium-large in investments mad	Specialist
NGOs	Ventures or projects	Micro-medium	Specialist

Scale: micro: under ECU 50,000; small: ECU 50-500,000; medium: ECU 500,000-5m; large: ECU 5m+.

ances (by transferring a tax credit to an organization that can use it). If the tax advantages are focused on environmental equipment (as for instance has been done in the Netherlands), it can be very effective in improving the links between the leasing industry and the environmental sector.

Ecological/ethical banks and microcredit

Recently a number of ecological or ethical banks have been formed in developed countries, such as the Ökobank and UmweltBank in Germany, the Triodos Bank in the Netherlands, Belgium and the UK, and the Ecology Building Society in the UK. These banks are typically very small (although growing) and focus on providing lending for "good" projects, which results in a major interest in small projects and business in the environmental sector, where they can be a significant force. They have also been behind the formation of a number of the environmental funds discussed below. In developing countries there has been rapidly growing interest in microcredit organizations which lend small amounts of money to the poor to enable entrepreneurial activity, initiated by the Grameen Bank in Pakistan (see article in this issue of *Industry and Environment*). While their primary goal is poverty alleviation rather than environmental protection, they can have a useful role in financing certain environmental technology – e.g. home PV systems.

Venture capital

Venture capital is a specialist form of investment that provides equity capital to new small companies. Small companies with no track record can have difficulties raising capital from most investors, and venture capitalists aim to fill the gap. It is normally high return/high risk – venture capitalists expect to see returns of over 25% from their investments, but accept that a certain number will fail. Normally they have a relatively long-term focus, aiming to hold companies for several years before selling them, and have a more active approach than most other types of investors in terms of participating in managing the company. Venture capital often has a focus on technology, with information technology and biotechnology being recent favourites. Venture capital has been strongest in the US, although it has grown substantially in Europe and the developing world recently as it is seen as encouraging entrepreneurial activity and economic growth. While many venture capital groups will look at environmental technology, there are few specialists in the area.

Initial public offerings

Obtaining a stock market listing and using the opportunity to raise capital is a mainstream financing activity which has been used by the environmental sector, e.g. Sto and Sero in Germany in the mid 1990s. The growth of second tier stock exchanges focusing on smaller companies in many countries should help make it easier for environmental sector companies to obtain listings and raise finance. This process would be made easier still if investors were properly informed about the environmental sector and had faith in the development of environmental policy.

Environmental sector funds

Dedicated environmental sector funds fall into two categories: those investing largely or solely in listed investments, and those investing in unlisted ventures or projects. Listed funds, the first to be launched, have been the most prominent. Several such funds were launched at the height of interest in the environment in the early 1990s. Many have not performed well because they were launched with a limited understanding of environmental trends and too narrow a definition of "environment". As a result, they invested in waste management and end-of-pipe technologies just as the market was shifting to cleaner production and waste minimization. More broadly based environmental funds have performed satisfactorily.

As these funds buy listed environmental company shares on the market, they do not channel any new money into the sector except at the initial public offering (IPO) stage or by subscribing to rights issues and other new share issues. However, buying these equities supports the market valuation of sustainable development companies, thereby encouraging more companies to be brought to the market and highlighting investor interest in the sector. The funds can also become forces for maintaining pressure upon the company's operations.

More recently, attention has shifted to unlisted funds. These funds focus on providing new money to projects and ventures within the environmental sector. They can make a positive contribution to sustainable development by channelling funds to key areas.

The most prominent example is the "green" funds launched in the Netherlands. These funds have focused on providing debt for environmental projects, and have been made especially attractive with the provision of tax concessions to investors. The other area where there is current activity is in the emerging markets, where development banks are keen on developing targeted investment vehicles with a sustainable development emphasis.

As well as providing capital, such funds can help overcome some of the obstacles encountered by emerging environmental industries through building up industry knowledge and providing financial expertise.

Non-governmental organizations (NGOs)

NGOs have also played a role in mobilizing finance for sustainable development. Particularly notable has been the work of US foundations, such as the MacArthur Foundation and the Rockefeller Brothers Foundation, in supporting the development of innovative financing vehicles in areas such as photovoltaics and other renewable energy projects as well as sustainable forestry. They have helped create vehicles like the Environmental Enterprises Assistance Fund, which provides funding for small-scale renewable energy projects, and E&Co, which provides pre-development finance for projects. In other countries there is possibly a greater reliance on the public sector for such support. This has its drawbacks, as the public sector can be slower to respond and less open to innovation than independent organizations.

Public sector investment banks

Public sector investment and development banks can play a role in encouraging the private financial sector to support the environmental sector through supporting research and innovation, providing part funding, and working through intermediary financial institutions. A number of development banks have recognized that with the expanded provision of private finance in many markets, they must redefine their roles. A natural step for them to take is to lead in the provision of finance in new or underfinanced areas, particularly those that are relevant to broader societal goals such as sustainable development. Financing the environmental sector appears to offer a suitable opportunity.

Among the multilateral development banks, the European Bank for Reconstruction and Development (EBRD), which must support sustainable development according to its statutes, has an active environment department. One area where it has been particularly active is supporting energy efficiency and the development of energy service companies. The World Bank Group, notably the International Finance Corporation, has also started to focus attention on the financial opportunities and challenges of sustainable development and has built up a portfolio of activities.

Analysis and ways forward

In financial market terms, the environmental industry represents something of a paradox: great fundamental prospects, but poor performance. Combined with a number of more technical factors, this has deterred investment. To overcome the problem and help the sector develop its full potential, there are a range of possible policy measures:

- First, policy makers need to ensure that the environmental industry has a level playing field through appropriate measures to convert environmental benefits into financial terms. These include environmental taxes, charges, tradeable permits, selective grants for the industry, removal of subsidies on polluting industries, and other fiscal measures.
- It is important that the policy developed be delivered in a clear, consistent way that is reasonably predictable and can be anticipated.
- Information dissemination strategies targeted at financial institutions concerning environmental change and the potential for the environmental sector could help improve understanding and encourage investment.
- Where the public sector has a direct role in environmental industry, it can help encourage the financial markets to become involved in environmental projects by structuring contracts appropriately (e.g. through secure agreements that remove many of the risks involved).
- There is scope for policy makers to ensure that existing financial support mechanisms for the

environmental sector (such as R&D grants) "dovetail" with the needs of the financial markets. This can be done by supporting demonstration as well as development projects, involving the financial sector as intermediaries in support mechanisms, and risk and cost sharing with them (e.g. through providing partial loan guarantees).

- At a more micro level, there is also scope to ensure that entrepreneurs are made aware of the needs of the financial markets at an early stage through the provision of information and support for training, and to improve links between scientists, entrepreneurs, financiers and business through support for networking and conferences.
- Policy makers can also help by supporting "agents for change". Examples include: industry initiatives such as those of UNEP on insurance and banking or national organizations such as the Social Investment Forum; the specialist environmental finance boutiques; encouragement of interest through the public and other end investors. Here, the action by the UK government to require pension funds to state their policy on Socially Responsible Investment is a good example.
- There appears to be validity in providing external support for the development of financial innovation. There are many opportunities to develop new financial products, such as "green" investment funds and venture capital environmental opportunities. Direct support, which reduces the costs and risks of developing such new financial products, could be an effective way of encouraging investment in the sector with substantial leverage.

If governments adopted an aggressive programme of such actions, they could greatly encourage financiers to support the environmental sector and thus accelerate progress towards sustainable development.

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Financial services and the environment: the accounting profession

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Abstract

This article surveys the development of "environmental auditing", especially regarding the accounting profession's responsibility for – and responsiveness to – serving the public interest. Work carried out to develop environmental accounting guidelines by the UNCTAD-sponsored Working Group on International Standards of Accounting (ISAR) is described. The implications of introducing environmental accounting include the need to make changes in education and training, work with other international standard-setting bodies, and re-examine some of the profession's fundamental concepts and standards.

Résumé

L'article traite des « audits environnementaux », du point de vue de la responsabilité des professionnels de la comptabilité vis à vis de l'intérêt public (et leur volonté de le servir). Il décrit les travaux engagés par le groupe de travail sur les Normes internationales de comptabilité (ISAR) financé par la CNUCED pour élaborer des lignes directrices sur la comptabilisation économique de l'environnement. L'institution d'une telle comptabilisation implique notamment la nécessité de modifier le contenu de l'enseignement et de la formation, de travailler en collaboration avec d'autres organismes internationaux de normalisation, et de revoir certains principes et normes de base de la profession.

Resumen

El presente artículo examina el desarrollo de la "auditoría medioambiental", en particular, en lo que concierne a las responsabilidades de los contables profesionales en la tarea de servir al interés público y de ofrecer un buen servicio. Describimos a continuación la labor del grupo de trabajo para la normalización de estándares en contabilidad (ISAR), patrocinado por la UNCTAD, en la elaboración de pautas de contabilidad aplicada al entorno. La introducción de la contabilidad aplicada al entorno comporta, entre otras repercusiones, la necesidad de realizar cambios tanto en la educación como en la capacitación práctica, colaborar con otros organismos internacionales de normalización y revisar algunos de los conceptos fundamentales y estándares de la profesión.

Introduction

The impact of the environment on the accounting profession can be summed up in one phrase, "environmental accounting". This phrase is now firmly established in the vocabulary and scope of the accounting profession, if not yet wholly in its practice. Put simply, the profession can no longer ignore demands that organizations account for the impacts of their operations on the environment either immediately or potentially, in the longer term. Environmental accounting will be defined more precisely below, but first we will look at some of the reasons that have led to this upsurge of interest in the environment.

The public interest

The accounting profession has long recognized that it is paramount to be seen to serve the public interest. This is not entirely selfless, of course. It is highly unlikely that the activities of any profession will be restricted solely to its members. The accounting profession has its particular functions, largely concerned with auditing specific types of organizations. Until very recently, the "public interest" was seen in a very narrow context by accountants. It was primarily concerned with the owners or shareholders of large private sector corporations, and with others who deal with them in a direct financial way such as lenders (bankers) and suppliers (creditors). However, in recent years the concept of public interest has been widened substantially to encompass other interested parties such as employees, the state, and the public at large.

The term "stakeholder is often used to describe this wider group of interested parties. While this term may have superseded "shareholder" in the press, PR publications, speeches, annual reports and so on, there is little doubt that for the accounting profession the dominant parties in relation to accounting and auditing standards are still shareholders and lenders. The movement by the profession to serve a much wider constituency and develop appropriate standards has progressed very slowly. Occasionally the slow pace of evolution has been accelerated due to natural events or other occurrences which bring about revolutionary change, and this has happened in the case of the environment.

Public concern about the environment, brought about by the often disasterous consequences of atmospheric pollution, oil spills, chemical and other toxic waste discharges and the potentially lethal impact of global warming, has made society at large much more conscious of the need to protect and safeguard the environment. As a result of these concerns, combined with the activities of dedicated and vociferous pressure groups, governments at the national, regional and international levels have introduced legislation (often with punitive sanctions if the law is broken) designed to control and restrict what many organizations are able to do.

The performance of corporations, particularly multinationals, is increasingly being judged not on financial results alone but also in regard to social and ethical issues, among which the environment ranks as high as any. Potential liabilities arising from environmental damage are having to be faced up to. Accidents with environmental consequences, such as the *Exxon-Valdez* disaster, have brought home the scale of damages which could be faced, as has the realization that actions in the past such as poor management of toxic waste disposal could lead to civil and criminal actions in the future. Environmental issues have become an important variable in the equations used by financial analysts and other investors to determine the risk associated with investment – the higher the risk, the higher the cost of capital. Faced with such a scenario, there were increasing demands for some form of reporting on and accounting for the environment. However, what and how it was reported had no structure, form or consistency from one period to another or from one organization to another. What was needed was a more disciplined and professional approach to environmental accounting, i.e. a framework providing standard performance indicators and principles for measuring, reporting and verifying them.

This immediately brought the matter into the domain of the accounting profession. Its reaction was, regrettably, slow and hesitant. Fortunately, the challenge was taken up elsewhere. It is to the great credit of the Intergovernmental Working Group of Experts on International Standards of Accounting (ISAR), sponsored by the UN Conference on Trade and Development (UNCTAD), that it took this issue on board. To date, ISAR's

contribution, although relatively modest in volume, has been impressive. It is currently the undoubted leader in the field of determining standards for environmental accounting.

The work of ISAR

Since the late 1980s, the United Nations has done a considerable amount of work related to environmental accounting issues through its various committees. ISAR took up the topic of environmental accounting in 1989. In its first survey on the subject, it discovered that there were no accounting standards specific to environmental issues. Some corporations did not consider environmental information necessary for the fair presentation of financial statements. Others, which were faced with sizeable environmental costs and were measuring them at least for internal management purposes, were looking for guidelines for external reporting of these costs.

In 1991, ISAR formulated its first guidance on environmental disclosure in financial statements. This was followed by two comprehensive surveys, in 1992 and in 1994, revealing that disclosure of environmental information that was qualitative, descriptive, biased and difficult to compare was still the order of the day – the very antithesis of good accounting practice. The most comprehensive work was presented in a position paper adopted by ISAR in February 1998. The main chapter, "Recommendations Adopted by the Intergovernmental Working Group of Experts on International Standards on Accounting and Reporting," although not authoritative, provides guidelines for best practice in accounting for environmental transactions and events. These recommendations are based on two reports submitted to UNCTAD. The first report, "Accounting and Reporting for Environmental Liabilities and Costs within the Existing Financial Reporting Framework," was prepared by David Moore, Director of Research Studies at the Canadian Institute of Chartered Accountants. The second, "Linking Environmental and Financial Performance: A Survey of Best Practice Techniques," was prepared by Roger Adams, Head of Technical Services and Research at the Association of Chartered Certified Accountants in the UK.

Some of the **basic recommendations** of the ISAR position paper are:

1. Environmental costs should be charged to income in the period in which they are identified, unless they meet the criteria for recognition as an asset. Environmental costs comprise the costs of steps taken, or required to be taken, to manage the environmental impact of an enterprise's activity in an environmentally responsible manner, as well as other costs driven by the environmental objectives and requirements of the enterprise.
2. Environmental costs that relate to a prior period should not be treated as prior period adjustment unless there is a change in accounting policy or unless there was a fundamental error.
3. Environmental costs should be capitalized if they meet the following conditions:
(a) They increase the capacity, or improve the safety or efficiency of other assets.
(b) They reduce or prevent environmental contamination.
(c) They conserve the environment.
4. Environmental liabilities should be recognized when there is an obligation on the part of the enterprise to incur environmental costs. An obligation does not have to be legally enforceable for a liability to be recognized. It could be a constructive obligation. A constructive obligation is one that can be created, inferred or constructed from the facts in a particular situation rather than being legally based, or that arises from ethical or moral considerations, and that an enterprise has little or no discretion to avoid. ISAR's definition has considerably widened the scope of environmental liability for accounting purposes.
5. When there is difficulty in estimating an environmental liability, the best possible estimate in the range should be provided. In the rare situation where an environmental liability cannot be estimated, disclosure should be made of the existence of such a liability along with the reasons why an estimate cannot be made.
6. Expected recoveries from third parties should not be netted against environmental obligations. These items should be reported separately: the latter as a liability, the former as an asset.
7. Disclosure should be made of the types of items that are identified as environmental costs.

With respect to the measurement of environmental liabilities that will be paid over a long period of time and that relate to future site restoration, closure, and removal of long-lived assets, ISAR proposes a number of approaches. These include:
(a) The "present value" approach, which ISAR considers to be the preferred approach. Under this approach the liability is measured at the present value of the estimated future expenditures that will be needed. The discount rate to be used should be at risk-free rate, such as the rate of government securities.
(b) The "current cost" approach, which ISAR considers to be the acceptable alternative. Under this approach the liability should be measured at the estimated cost of performing the required activities in the current period.
(c) The "anticipated expenditures" approach, which ISAR does not support. Under this approach, anticipated expenditures over the life of the related operations are based on an estimate of the undiscounted cash outflows that will eventually be required.

ISAR's work continues, of course. Its current and medium-term programme covers such topics as linking environmental and financial performance, recommnendations for additional disclosures to flow through the annual reports of listed companies, standardized environmental performance indicators, and a framework of generic environmental performance indicators based on Agenda 21 eco-efficiency principles.

The accounting profession – quo vadis?

The increasing pressure to account for the environment, along with the success of ISAR's work, has at last awakened the word-wide accounting profession to the need to get involved and to realize that environmental accounting is not just a fad which will pass as time goes by, but something which will increasingly impact upon the profession.

The work of the accounting profession in preparing, reporting and verifying financial and other information can be conveniently classified into three areas: financial accounting, management accounting and auditing. Financial accounting deals primarily with the preparation of financial and other information for *external users* and is often described as reporting on management. Management accounting deals with the preparation of financial and other information for *internal users*, and is again often described as reporting on management. Audit is concerned with verifying the correctness and fairness of the information disclosed in *financial statements*. While it is predominately associated with financial accounting (the credibility of such financial statements would disappear if management were able to report what, and how, they wanted as opposed to what had actually happened), it is taking on an ever increasing role within management accounting as well.

Environmental accounting has been and will be increasingly impacting upon all three areas. The major influence to date has been on financial accounting, via the reporting of environmental costs and liabilities. As we have seen, significant progress has been made in this area. But with management accounting and internal decision-making, more and more attention is being paid to the benefits vs. the costs of eco-efficiency – both short-term and long-term. Energy saving and waste management schemes can benefit both the environment and the organization which implements them. Similarly, what happens at the end of a project lifetime is now as important as what happens at the beginning, and investment appraisal has to take account of this change. Major investment in the oil industry, for example, almost always requires an environmental impact survey prior to commencement. Such a survey often looks at what will be required to protect the environment, not only during the project lifetime but also at the end, so that the site is returned to what it was and, at the very least, in the same condition. Information that cannot be objectively tested and verified lacks credibility. Therefore, audit principles also need to be able to be applied to environmental accounting. There needs to be an audit trail which can be followed in order to derive and check the basis of the figures in any environmental accounting report.

Will the accounting profession be able to cope? Or will it be left to some other group or profession to shoulder these responsibilities? I believe the former, but unless the profession adapts then I fear the latter. What does this adaptation require?

There is a need to review the profession's educational and training programmes, not only to ensure that environmental accounting forms part of the curriculum but also to see what new skills, if any, are required for accountants and auditors. We cannot, of course, expect accountants to be special-

ist environmentalists. In many cases they will have to call on the expertise of others, as indeed already happens in many areas of accounting. Nevertheless, they will need a much better understanding of environmental auditing, evaluation of long-term impacts, reassessment of environmental provisions, expected recoveries, decommissioning provisions, constructive obligations, contingent environmental liabilities, and the capitalisation of environmental costs, to name just a few. Such an educational review is timely, as most national professional accounting societies will be examining their current curriculum in light of the development, also by ISAR, of a model curriculum for a Global Accounting Qualification.

The accounting profession is going to have to consider how it can work more closely with other major standard-setting bodies, and to accept that in the area of the environment it cannot continue to hold the view that it is the sole master in its own house when it comes to accounting standards. Environmental performance is too important for this. Other bodies such as the International Organization for Standardization (ISO), which has already issued guidelines on environmental performance evaluation (ISO 14001), will have to be included in the standard-setting process.

Corporate freedom in this area is going to be increasingly restricted as rules and standards for external reporting are developed. In the case of internal reporting, while the application of management accounting techniques has demonstrated that many environmentally conscious projects (e.g. in energy efficiency) produce net economic benefits for the enterprise as well, there will undoubtedly be many others which do not and which will be seen as simply increasing costs with no apparent benefit for the specific enterprise. It will be incumbent on the profession, through its audit arm, to report on compliance with standards and contracted obligations.

An accounting and reporting framework is required that provides standard performance indicators, and the principles and standards for measuring and reporting them. Environmental accounting should not be regarded as a simple add-on to what exists at present.

There is a need to consider traditional accounting parameters, in order to determine their suitability for the new demands placed on them. The first two steps in the accounting process are recognition and measurement. Before any accounting can take place, we need to recognize that an economic event has taken place which will affect the financial statements that are required to be prepared. Once recognition takes place, we need to be able to measure this event or, to use the accounting term, "value" it. There are quite strict accounting rules concerning the recognition and measurement of economic events. However, accountants have long been accused of allowing the second step to determine the first, i.e. of only recognizing what they can measure and never recognizing what they cannot. Whether these accusations are justified is not relevant here. What is relevant is that no environmental impact can be ignored, as current accounting rules for measurement are not applicable. The rules, or standards, for recognition and measurement will need to be re-examined, and adapted/amended if required. The challenge of environmental accounting is to bring about meaningful disclosure within accounting practices and standards. If existing practices and standards do not enable us to take up the challenge, then, rather than withdraw, the profession has to consider what accounting practices and standards would enable it to do so.

Environmental accounting must be seen as both a challenge and an opportunity: an opportunity for the profession to consolidate its position and reputation as the custodian of rigorous management information systems. ●

Industry and the environment: a Danish perspective

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Abstract

Many countries have introduced comprehensive environmental protection laws in the last few decades. However, it has gradually been recognized that changes in awareness and in management principles are needed along with specific technical regulations. Environmental management techniques have been developed to assist companies in reducing, evaluating, monitoring and controlling environmental impacts at a corporate level. This article, based on a survey of Danish companies, addresses the questions: How have these techniques been adopted in industry? and, Have changes in attitude occurred?

Résumé

Ces dernières décennies, de nombreux pays ont adopté des corps de lois complets sur la protection de l'environnement. Mais on s'aperçoit petit à petit que des changements sur le plan de la sensibilisation et des principes de gestion doivent s'opérer et que des réglements techniques spécifiques sont nécessaires. Des techniques de gestion de l'environnement ont été mises au point pour aider les entreprises à réduire, à évaluer, à surveiller et à maîtriser à leur niveau les impacts sur l'environnement. Comment ces techniques ont-elles été adoptées dans l'industrie ? Y a-t-il eu des changements d'attitude ? L'article est basé sur une enquête réalisée auprès d'entreprises danoises.

Resumen

Durante las últimas décadas, muchos paises han incluido en su legislación leyes para la protección del medio ambiente. Sin embargo, se ha observado que sigue siendo necesario aumentar la concienciación y modificar los principios de gestión, además de concebir reglamentos técnicos específicos. Se han desarrollado técnicas de gestión medioambiental con el fin de coadyuvar a las empresas a reducir, observar, evaluar y controlar las repercusiones medioambientales de forma colectiva. ¿Cómo se han aplicado dichas técnicas a la industria? ¿Se han producido cambios de actitud? Este articulo está inspirado en un informe relativo a las empresas danesas.

Human activities influence the natural environment in many ways, e.g. by eroding the stock of natural capital and undermining nature's absorptive capacity. Over the past few decades some of these activities have led to large-scale environmental disasters, e.g. in those in Seveso and Bhopal and the *Exxon-Valdez* oil spill in Alaska, resulting in increased awareness of the effect of business activities on the physical environment. Consequently, environmental legislation and regulations have been increasingly tightened, mainly focusing on industrial activities, where the impacts are generally directly visible.

Gradually, as business's environmental effects have been recognized by pioneering firms, a number of voluntary initiatives have been taken. To help companies reduce, evaluate, monitor and control the environmental impacts of their activities, various environmental management techniques, such as environmental management systems and life cycle analyses, have been (and are still being) developed. The question is: To what extent are these techniques applied in general?

This article attempts to outline the situation in industrial companies in Denmark, where the first major environmental protection law was introduced over two decades ago. It provides an overview based on a recent comprehensive questionnaire survey of Danish companies. The questionnaire was completed by the manager responsible for environmental issues. The article touches on the key drivers of the corporate environmental greening process, the extent to which environmental impacts have been recognized, specific environmental initiatives taken, and improvements actually achieved.

The general situation and sectoral differences

The fact that the survey includes all types of companies makes it possible to compare the situation in the industrial sector with that in the service sector. Therefore, before describing Danish industry in more detail the article takes a look at the general situation, including a comparison between industrial and service companies. For ease of comparison among the four topics and two sectors, the results are presented as an index ranging from 0 to 10 (**Figure 1**).

The general development shown in Figure 1 is characterized by a decreasing tendency, from perceived influence through impacts and initiatives to actual improvements. In other words, Danish companies tend not to have a specific high level of activities in relation to environmental issues. Furthermore, this development seems to reflect the perception that:

- the actual influence of the various driving forces is higher than the actual level of recognized impacts;
- the level of recognized impacts is higher than the level of environmental initiatives; and
- the level of environmental initiatives is higher than the actual improvements achieved.

However, the difference between the stages is fairly insignificant.

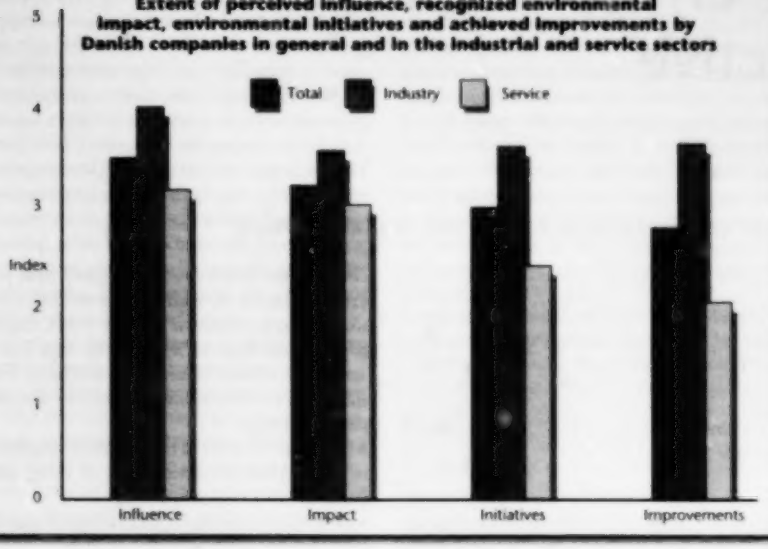
The service sector shows a similar tendency, albeit at a somewhat lower level. There is also a distinct change of level between the recognized impact and environmental initiatives actually implemented. This difference turns out to be significant. The tendency in the industrial sector is greater than the general tendency in all situations, though still at a relatively modest level. Furthermore, the development from recognized impacts through initiatives to improvements shows a slightly increasing tendency. Thus, managments in Danish industry seem to think that they have taken initiatives at a level which is not lower than the level of recognized impacts, and that they have achieved improvements at a comparably high level. The long tradition of environmental regulation in the industrial sector may explain this finding. However, managements are still under the impression that the perceived influence is at a somewhat higher level.

Finally, the level of the service sector at each stage is significantly below the level of the industrial sector. This can probably be explained by the fact that environmental regulation has so far mainly focused on the latter. However, as environmental regulation in the industrial sector gathers pace, environmental impacts can be expected to be reduced accordingly. When this happens, the focus is likely to shift to other areas where environmental impacts, currently less important and more indirect, become more visible. With an effective regulatory system already established in the industrial sector, interest is now likely to turn to the service sector.

Perceived influence

It is gradually being recognized that, as regards environmental issues, the stakeholder concept must be seen in a broader perspective than ordi-

Figure 1
Extent of perceived influence, recognized environmental impact, environmental initiatives and achieved improvements by Danish companies in general and in the industrial and service sectors



nary business activities. One reason is that individuals who would not normally be regarded as having a legitimate interest in the company's activities may be influenced in one way or another by its environmental impacts, e.g. through living near the company or merely as a concerned member of society. Such individuals are becoming less and less tolerant of environmental "abusers". In other words, environmental impacts are causing concern far from their origin or traditional jurisdictional boundaries. Pressure to carry out environmental initiatives may therefore be the result of a large number of different influences. Regulations and competitive conditions are among the traditional influences. However, in order to include as many actual influences as possible, the perceived influence of the following has been examined:

- consumer organizations;
- environmental organizations;
- financial institutions;
- the press and other media;
- R&D institutions;
- local regulations;
- national regulations;
- international regulations;
- owners;
- employees and trade unions;
- competitors;
- customers;
- distributors;
- suppliers.

As stakeholders with an interest in companies' environmental issues, the first five influences are more recent. The rest represent regulations and the market-based dimension. Perceived influences on the surveyed companies' environmental decisions are shown in **Figure 2**. Most companies considered owners and national regulations as the main influences and, to a lesser extent, customers, international regulations, employees and trade unions, and local regulations. Traditional stakeholders – and, to a large degree, regulations – were still seen as having the greatest influence on companies' environment-related initiatives. In light of the economic consequences associated with environmental remediation (e.g. of contaminated soil), it is surprising to find that a stakeholder such as a financial institution does not seem aware of the potential risk to its own business activities of environmental conditions in industrial companies. However, there are exceptions.

Perceived influences can be grouped into three categories. The main influences include owners, national and international regulations, some local regulations and, in part, employees/trade unions. This group tends to exert a very direct influence on the decision-making process. The second category includes environmental and consumer organizations, the press and other media, R&D and financial institutions, the main body of local regulations and, in part, employees/trade unions. Except for financial institutions, this group has a perceived medium influence, though generally at a somewhat lower level than the previous group. Generally speaking, these stakeholders have a very indirect influence on companies' decision-making. The final category consists of customers, distributors, suppliers and competitors. Except for the high perceived influence of customers, the stakeholders in this group are perceived as having only slightly less influence than that of the second group. These stakeholders all have a market-based relationship with companies. Thus, their influence is also indirect though often more perceptible. The above suggests that direct and mainly regulatory factors are still perceived to be the key drivers, whereas market mechanisms or new stakeholders do not have any significant influence on environmental decision-making.

All influences covered by the survey are expected to increase in the near future. On a relative scale, this expected growth will generally be highest for the those perceived as being the lowest at present. On an absolute scale, the order of influence will remain the same. In other words, regulations and owners are still expected to play an important role in the future, and financial institutions are still expected to have a limited influence.

Recognized environmental impact

Overall, as Figure 1 indicates, managers in Danish industry did not consider that their business activities had major impacts on the environment. By environmental impacts is meant first and foremost those such as soil contamination, discharge of wastewater, air pollution, noise and use of raw materials. One reason for this view is that the Danish statutory Health and Safety Scheme, which has been in place for a number of years, has created a strong awareness of environmental problems related to the working environment. The effect on the internal environment in general is obvious. Energy consumption is an exception to the recognition of environmental impacts, inasmuch as half the companies surveyed indicated that their activities were very energy intensive. However, about a third did not consider their activities very energy intensive. Another question altogether is whether companies relate the impact of this consumption on the external environment to the extraction and burning of fossil fuels. Another area where managers recognized environmental impacts was solid waste. About a third of the managers reported that their company's activities produced large quantities of solid waste, while the rest indicated the opposite.

Similarly, the companies did not consider that their products had any major impacts on the environment during the products' life-cycle. This also applied to extraction of raw materials, the companies' own production processes, and products' use, disposal and recycling. Two main areas where environmental impacts are acknowledged are, however, suppliers' production processes and total logistics: areas mainly outside the direct influence of the responding companies.

While the overall impression is that recognition of environmental impacts is generally fairly low, it is interesting to observe that such recognition seems higher in larger companies than in smaller ones. This can be due to two factors. First, large companies have greater human resources than SMEs, which means that they are more likely to have employees with a specialized knowledge of environmental issues. Such employees tend to be more aware of environmental conditions. Second, the higher and more diversified the level of activities, the more visible the environmental consequences. In both cases, there is likely to be a greater level of recognition of present environmental impacts – at least within the company.

Environmental initiatives

As shown in Figure 1, only a small number of measures have been carried out to control or reduce environmental impacts. The main initiatives concern the internal environment, reduction of energy consumption, recycling or disposal systems, and production issues, while there have been few initiatives concerning protection and pollution of the soil or the extraction, reduction

and replacement of raw materials. There are three main reasons for this. First, there is statutory Health and Safety Scheme mentioned above, which has mainly focused on the working environment. Many of its initiatives have been concerned with improving internal environmental conditions in general, including production processes. Second, many local and national regulations focus on waste, which has forced a lot of companies to introduce systems for waste separation previous to disposal. Many of these companies have tried to reduce the costs of such arrangements by reducing the amount of waste they produce, e.g. by introducing recycling arrangements wherever possible. Third, the focus on cost reduction is compounded by the introduction of environmental taxes, e.g. on energy and waste.

Larger companies and export companies have generally introduced more environmental initiatives than other companies. The human resource factor is obviously responsible in the former case, while in the latter it can be explained by the more sensitive situation of exporters and perhaps also by an emerging international awareness and increasing international regulations, e.g. those of the EU. In addition, managers dealing with environmental, quality or production matters generally report more initiatives than those dealing with financial, marketing or general matters.

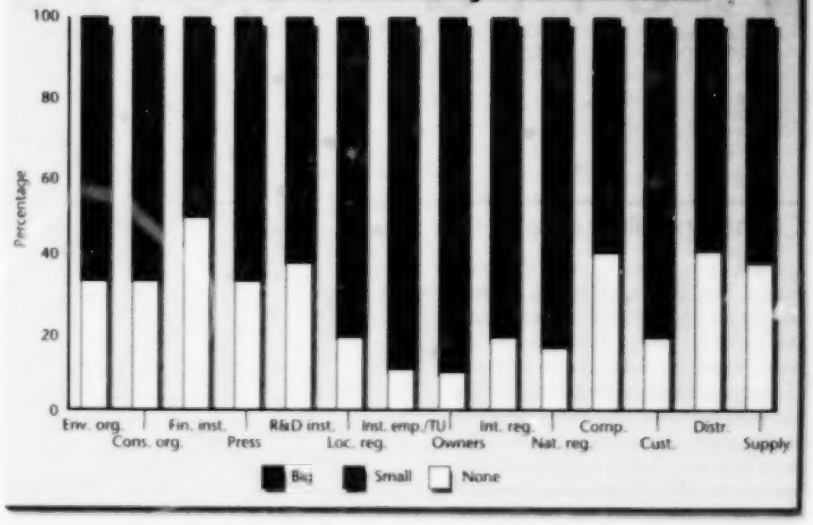
The main organizational initiative reported in the surveyed companies involved internal environmental instructions, introduced to some extent in about one-third. Very few companies had directly established an environmental strategy, carried out environmental accounting or auditing, or given overall responsibility for environmental matters to one manager. Hardly any companies published a separate environmental report or included environmental topics in their annual report. It was rare to have signed an environmental code or introduced an environmental management system.

Improvements made

As the number of initiatives has been limited, it is not surprising that the improvements made have also been limited. Furthermore, like the initiatives themselves, the main environment-related improvements have occurred within the internal working environment and the reduction of energy consumption. Little has been done with regard to soil pollution, primarily because the majority of companies consider this issue as irrelevant to them.

More than half the companies reported that they had achieved improvements in their own production processes, while about a third indicated that they had improved the use of products and logistics, as well as product disposal or recycling. Most companies did not consider raw materials extraction a relevant issue.

Figure 2
Percentage of surveyed companies that acknowledge the influence of various stakeholders when making environmental decisions



The improvements achieved were generally perceived as having only a moderate influence on central business areas like market share, sales and profits, whereas they had a substantial influence on management and owner satisfaction, as well as corporate and product image. These improvements mainly seemed to have an internal effect, since the increased corporate and product image had not been reflected in increased competitiveness, market share or sales – at least not yet.

Larger companies and those with a high proportion of exports seemed to evaluate the achieved improvements more positively. This is not surprising, since these companies generally recognized environmental impacts more than did other companies and had introduced more environmental initiatives. Similarly, managers responsible for environmental, quality or production matters seemed to evaluate the achieved improvements more positively than managers in other positions. Thus, the environmental attitude of corporate management seems to influence the evaluation of achieved improvements.

Conclusion

Based on the findings of the survey, it is tempting to conclude that, as regards the perceived environmental impact of business activities and products, the managers who responded did not appear to feel there were any major environmental problems related to the areas and activities for which they were directly responsible. However, since they did think their suppliers' production processes had an impact on the environment, this could be more a case of "out of sight, out of mind". The implication is therefore that Danish industrial companies do not yet have a positive environmental attitude, i.e. are mainly reactive.

This is further underlined by the managers' attitude to environmental initiatives. Their first concern was to comply with current regulations, and their next was to take advantage of any cost savings. While it could be argued that the latter is necessary if a company is to survive, these priorities indicate a certain degree of short-sightedness as regards environmental initiatives, which tend to be introduced due more to cost considerations than to genuine concern about environmental impacts. If industrial production is to take place with respect for the environment, these two objectives need to be integrated. As a crucial step, more than the present limited number of managers must see that this presents both strategic and marketing opportunities.

Managers do realize that their own convictions and attitudes, along with those of the owners, are of the utmost importance. In other words, they seem to acknowledge that direct control by regulations and indirect control by, for example, taxes, cannot do the job alone. Reducing the environmental impacts of industrial companies requires, more than anything else, changes in attitude. If this could be achieved, managerial decisions might be able to integrate purely company-specific interests with the environmental interests of society. However, this is far from being the case at the moment. As the above results indicate, there may be a correlation between a manager's position and his/her point of view in relation to environmental issues. Thus, in order to give managers, whatever their professional background, a more holistic view and understanding of the environment, the integration of environmental issues into all education and training programmes is needed. ◆

World News

Country profile: Latvia

Latvia is located in the centre of the Baltic region. The Baltic Sea forms its western boundary, with over 500 kilometres of coastline. Latvia has borders with Estonia to the north, Russia and Belarus to the east, and Lithuania to the south. The land is generally low-lying with abundant forests, bogs and surface water. Forests cover 44.6% of the total land area, while agricultural uses account for 39%. There has been a steady decrease in agricultural land use in recent decades. Over a million hectares of arable land has reverted to forest since 1960. Only 1.4% of the land area was built up in 1996. The population – approximately 2.5 million in 1997 – is highly urbanized, with over 35% concentrated in the Riga metropolitan area.

Latvia first gained its independence in 1918, but was annexed by the Soviet Union in 1940. The country was integrated into the Soviet planned economy, and industrialization (centred on heavy industry, machine building, and electronics) increased after the Second World War. Owing to its location on the Baltic Sea, Latvia is a major transit and storage point for energy products, especially oil, from Russia. It is relatively poor in natural resources. Industry relies heavily on imported raw materials and energy.

The country regained its independence in 1990. The subsequent transition to a market economy led to a sharp decline in GDP in the early 1990s, but the economy has begun to recover in recent years. GDP grew by 6.5% in 1997, the latest year for which figures were available. The agricultural sector remains hard-hit, however, with production falling by 58.4% between 1991 and 1994 and continuing to decline, although less steeply, since then.

Around 70% of Latvia's population lives in urban areas (as of 1996) and high unemployment in agricultural areas has encouraged continuing migration to cities and towns. Population pressure has caused urban water supply and sanitation problems which, together with pollution, present a serious threat to human health. Industrial activity, outdated heating and sewage systems, past Soviet military activities, and Latvia's position as a transportation hub have all contributed to high residual pollution and environmental damage.

Table 1
Transboundary import/export budgets of air pollutants, 1986-95

Latvia's territory	Oxidized sulphur	Oxidized nitrogen	Reduced nitrogen
Export mass (100 t)	208	188	163
Exported % of emissions	80	95	57
Import mass (100 t)	654	266	190
Imported % of depositions	93	96	61
Net import (100 t)	446	78	27

Source: UN/ECE, EMEP/MSC-West Report 1/96

Environmental policy and legislation

The political changes in Latvia that began in the late 1980s were closely connected with a rise in public concern about the environment. Many current leaders and senior civil servants became well-known through their environmental activism during that period. On independence in 1990, Latvia became a parliamentary democracy and restored its pre-Soviet constitution. The legal system is still evolving, and existing Soviet-era legislation continues to be applied as long as it is not contrary to the Constitutional Law on the National Status of the Republic of Latvia.

Responsibility for environmental management lies mainly with the Ministry of Environmental Protection and Regional Development (MEPRD), although several other ministries are charged with administering certain areas of environmental protection and resource management. These include the Ministry of Welfare, Ministry of Agriculture, Ministry of the Interior and Ministry of Transport. The MEPRD's major functions are to devise and implement common policies on environmental protection, conservation and use of natural resources, regional development, local administration, tourism, hydrometeorology, construction, and subsoil use. Environmental legislation is usually drafted by the competent ministry and reviewed by other ministries, as appropriate, and by the government's European Integration Bureau.

In 1996, the MEPRD had a staff of about 120 with a system of subordinated and supervised institutions, as well as eight Regional Environmental Boards (REBs) employing another 1600 people. The REBs, which carry out policy on a regional level, have the most direct authority for control and enforcement of environmental legislation. Municipalities also have responsibility for some environmental management tasks, including collection, transport and disposal of non-hazardous wastes and management of water supplies and wastewater treatment.

Latvia's environmental legislation consists of numerous statutes adopted piecemeal, some dating back to the Soviet period, rather than a systematic legal framework. The 1991 Law on Environmental Protection, which sets forth basic rules and principles on environmental protection and management of natural resources, was one of the first laws to be adopted after independence. Although the government does not regard environmental and regional development as top priorities, there has been substantial expansion of environmental legislation since independence. The National Environmental Policy Plan (NEPP), adopted in 1995, defines environmental policy goals and priorities and contains basic principles and instruments for policy implementation. A National Environmental Action Programme, focused mainly on biodiversity, agriculture, waste, and water, was adopted in 1997.

International requirements have become one of the most important considerations in the development of national environmental legislation. The government is harmonizing its environmental regulation with EU directives and practices, in the context of possible EU membership. New legislation is continuously being enacted, and new environmental regulations are being developed as part of the EU approximation process.

Latvia's current environmental standards, still largely based on Soviet-era regulations, are generally stricter than the EU's but are often not enforced. They include minimum air and water quality standards, anthropogenic load limits, limits on hazardous substances, and emissions restrictions. Permits for air and water emissions and hazardous waste generation are issued by local governments or the REBs. These set limits on daily or annual pollutant loads, pollution concentrations in waste streams, and emission rates. Emissions limits for businesses are calculated using Soviet-developed technical manuals, but it is common for businesses to negotiate limits that are more realistic based on their continuing economic constraints. Regulations also require environmental impact assessment for a variety of projects,

such as construction of factories, and for such strategic initiatives as State development programmes, new technologies, and so on. Unlike most other countries with EIA requirements, Latvia's law requires that the assessment be performed by government or government-appointed experts, rather than by the developer.

Enforcement responsibility lies mainly with the Environmental State Inspectorate, part of the MEPRD, and includes the power to bring criminal charges, assess financial penalties, and terminate the activities of offending enterprises. In practice, however, the fines assessed to date have been negligibly small and no enterprises have been shut down. Violators must also pay financial compensation for environmental damage and are responsible for restoration. Former Soviet military sites in Latvia present a special problem in this regard; under the troop withdrawal agreement between Latvia and Russia, Latvia waived any potential compensation claims. The sites remain polluted and in need of environmental clean-up in many cases. The government also imposes charges on the sale or import of potentially polluting products such as batteries, tires and ozone-depleting substances. The proceeds are used to fund recycling and disposal of these products.

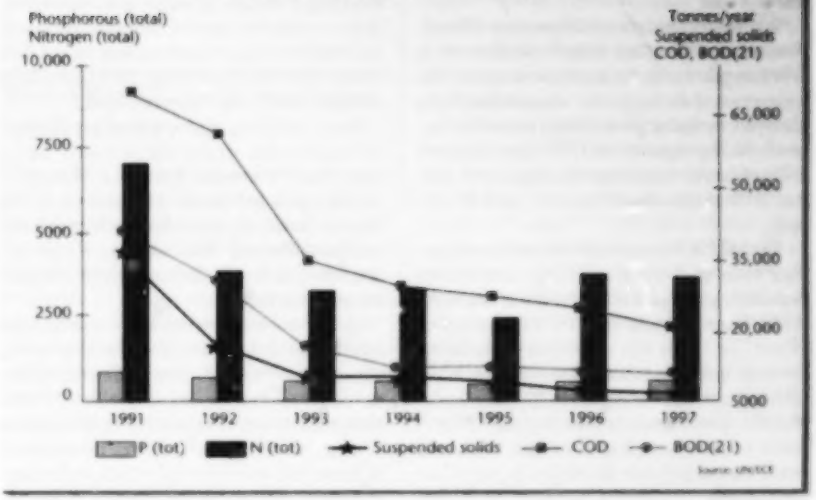
Air pollution

Air pollution is a significant problem in Latvia's major cities. Although the Latvian Hydrometeorological Agency's monitoring data show that ambient air concentrations of particulates, NO_2, SO_2 and CO did not exceed national health standards in 1996-97, mobile monitoring systems in the big cities show that 24-hour limits for NO_x and ozone are often exceeded. The air in almost all cities exceeds WHO standards for particulate matter, while mean annual concentrations of ammonia and other pollutants exceed national standards in the major cities.

Latvia's per capita emissions of common pollutants are lower than those of other Baltic countries and are among the lowest in Europe, with 1995 emissions averaging 17.0 kg/capita of SO_x, 11.6 kg/capita of NO_x and 4.4 kg/capita of CO_2. SO_x and CO_2 emissions were approximately 40% of the OECD average, while NO_x emissions were less than 25%. Latvia is a net importer of air pollution (see **Table 1**), receiving significant depositions of oxidized sulphur, oxidized nitrogen and reduced nitrogen from Germany, Poland and Lithuania.

Air emissions of SO_x, NO_x, CO and particulates from stationary sources decreased significantly between 1990 and 1997, with SO_x declining by 40%. Power and heat generation processes are the major stationary sources of emissions, accounting for 98% of SO_x, 88% of CO, 77.3% of NO_x and 42.4% of particulate emissions. Latvia has an energy-inefficient system of central heating networks, a legacy of Soviet times, that supplies 40% of the population and is fueled mainly by heavy fuel oil (HFO) and coal. Outdated thermoelectric generating plants that provide almost 40% of domestic electricity also use imported HFO and coal and contribute to air pollution. Pollution from particulates containing heavy metals is a problem in areas around thermoelectric generating plants and some industrial complexes.

Figure 1
Pollution load of Latvia's river network, 1991-97



The transport sector is also a major source of air pollution, with emissions generally exceeding those from stationary sources. Latvia's role as a hub for road, rail and marine transit has been increasing steadily since 1993. Its diesel locomotives and many trucks and cars, dating from Soviet times, are generally low in fuel efficiency and highly polluting. Only estimates were available on emissions from mobile sources, but transport-related emissions are undoubtedly rising as the number of vehicles has increased by almost 40% since 1995. These emissions are likely to continue to rise, exacerbated by the inadequacy of public transit in Latvia's cities. The MEPRD's air emissions inventory does not cover important sectors such as households and agriculture.

The MEPRD is responsible for enforcing air pollution requirements through the Environmental State Inspectorate and REBs. It monitors air pollution through the Hydrometeorological Agency. A number of air pollution control ordonances, adopted in 1991 and 1996, combine command and control mechanisms with economic instruments to regulate emissions from stationary sources. Although economic instruments are applied, including emissions charges, fines and excise duties on fuel, these have not been large enough to produce positive environmental impacts to date. Technical requirements and inspections for transport vehicles are administered by the Ministry of Transport, whose statistics show that 44% of vehicles in Riga and 28% in the country as a whole failed the pollution test during the first round in 1997. The situation can be expected to improve as environmental expenditure, especially for updated equipment, increases and more energy-efficient technologies come online. The reduction and eventual discontinuation of leaded fuel use should also reduce transport impacts. Latvia's air quality standards management systems are now being revised as part of its effort to harmonize pollution regulations with those of the EU, incorporating best available technology concepts, fewer but more realistic ambient air quality standards, and stronger enforcement and monitoring measures.

Water management and pollution

Latvia has generous water resources because of its wet climate and extensive surface water network. Both surface and groundwater sources are used, with surface water providing 58% of the total 1997 water intake of 404 million m^3. Abstraction levels have diminished by over 40% since 1991, due mainly to reduced economic activity. Annual per capita water abstraction was 162 m^3 in 1997, but per capita water use is considerably lower due to water losses of 25-30% during distribution.

Groundwater, which provides over 70% of drinking water and is generally of good quality, contains less agriculture-related pollution than is typical in Western Europe. Nitrate concentrations generally do not exceed 20 mg/litre; the limit value in Latvia is 45 mg/litre. There are some local problems, especially in areas where industry or intensive agricultural uses such as pig farming predominate, or near solid waste disposal sites. Surface water is used mainly to meet agricultural, industrial and fishing requirements. The water quality of most Latvian rivers is good and has improved in recent years (see **Figure 1**), although some have been affected by municipal wastewater and industrial discharges. Water quality in lakes is not monitored systematically, but it appears to have suffered from excessive nitrate and phosphate concentrations, especially in the large shallow lakes of the Riga region. Water quality in the Gulf of Riga is affected by nitrates and phosphates in river waters that discharge to the Gulf. Although data from recent years are not sufficient to establish a trend, pollutant loads may fall as agriculture and its associated discharges decrease. Most of Latvia's rivers originate in other countries, bringing some pollutant loads into the country with

them. The government has been working with the governments of neighbouring countries to address the problem.

Wastewater generation fell from some 560 million m^3 in 1989 to less than 330 million m^3 in 1997, largely due to the economic recession. The proportion of discharges that went untreated also dropped, as discharges no longer exceeded treatment facility capacity. In 1997, approximately 60% of Latvia's wastewater discharges were treated (61% of this amount was only partially treated).

The MEPRD is responsible for monitoring surface water quality and enforcing water quality standards and regulations established under the 1972 Water Law and the 1997 Regulations on Water Use. Latvia is in the process of modifying its water quality standards to match those of the EU; in practice, however, it has applied internationally agreed standards since the early 1990s. A water permit system is in place that covers both water use and pollutant discharges. As part of Latvia's compliance with the Convention on the Protection of the Baltic Sea, pollution hot spots have been identified along its rivers and wastewater treatment plants have been upgraded in the worst areas. There is ongoing work to upgrade facilities or build new ones in other identified hot spots. The continuing financial constraints imposed by the country's transitional economy remain the greatest obstacle to improved water quality.

Waste management

Data on waste generation in Latvia are incomplete, but it is clear that waste creates major problems due to both the effects of improperly managed landfills on groundwater and the number of sites with serious contamination from past military uses. There is no reporting system for municipal or industrial wastes. Field surveys by the REBs reported that approximately 500,000 tonnes of household and service industry wastes was generated in 1996, but this figure is likely to underestimate actual waste generation by 20-40%. Only a small fraction of industrial waste is registered, and no reliable total could be obtained. Hazardous waste, although subject to reporting, is not monitored and statistics are unreliable. The economic recession has led to a large and continuing reduction of industrial waste generation, but household waste generation has grown with the increase in consumption of packaged goods. Waste generation can be expected to increase in the next few years as economic recovery proceeds.

Almost all waste in Latvia is landfilled. None of the 558 landfill sites known in 1997 was operated using current environmental management techniques and standards, and 160 closed landfills continue to leach pollutants to groundwater. Only two cities have separate hazardous waste handling facilities; elsewhere, hazardous wastes are landfilled together with municipal wastes. Bogs and former quarries, often used as landfills, present a particular threat to the environment because of the ease with which contaminants can reach the groundwater. Illegal waste dumping is also a serious problem; because users are not legally obligated to pay for waste disposal service, many avoid it by dumping refuse of all types in uncontrolled areas. Wastes including chemicals, pesticides and other hazardous materials have been left behind at abandoned industrial sites and at former military bases. Often stored under unsafe conditions, they pose a threat to human health and the environment.

Waste recycling opportunities are limited. Although no data are available, it is likely that no more than 5% of wastes is recycled. Markets for recycled glass and plastics are quite small, and there is virtually no market for recycled paper and cardboard. Recently some recycling of construction waste, used tyres, and some types of hazardous waste has begun.

Lack of national waste management policies and coordination in the past has contributed to Latvia's waste-related problems. The National Environmental Action Programme, adopted in 1997, sets out specific actions to reduce the negative impacts of waste, including new legislation, minimization of household and industrial wastes, technology assessment, and eco-labeling schemes. It also calls for economic instruments to encourage recycling, improved waste handling, and clean-up and proper management of landfills. These actions are supported by the EU's PHARE assistance programme. A National Hazardous Waste Management Strategy was implemented in 1997, and the first response action, clean-up and safe storage of obsolete pesticides, has been completed. Adoption of standards consistent with EU requirements and guidelines for landfill site selection, construction and management are longer-term goals.

Compliance with international policy standards

Latvia's national environmental programmes are generally being structured in accordance with the legal framework of the EU, as part of the qualification process for membership. Although harmonization with EU legislation and regulations should be achieved in the medium term, compliance with its standards for wastewater treatment, air and waste management, and other areas will be achievable only in the long term and with major increases in investment. Latvia's previous international cooperation efforts, focused mainly on the Baltic region, include adoption of the Baltic Sea Declaration which calls for establishment of an action plan for the Baltic's "ecological restoration and preservation". It has begun to implement many of the recommendations of the Helsinki Commission under the Convention on the Protection of the Marine Environment of the Baltic Sea Area, which it ratified in 1994. More recently, Latvia has acceded to several international environmental conventions, among them the Convention on Long-Range Transboundary Air Pollution and the Convention on the Protection and Use of Transboundary Watercourses and Lakes. Lack of funds, however, has inhibited it from fulfilling all of the protocols to these conventions.

Latvia also signed the Declaration on Environment and Development adopted at the 1992 Rio Conference, as well as the UN Framework Convention on Climate Change (UNFCCC), ratified by the Latvian Parliament in 1995. It has signed and ratified the Basel Convention on Movement and Disposal of Hazardous Wastes; the Convention on Biological Diversity; and the London and Copenhagen amendments and adjustments to the Montreal Protocol on Substances Depleting the Ozone Layer.

Future challenges

Since independence, Latvia has made considerable progress in creating a framework for effective environmental management. Given its financial constraints, the country's most urgent needs are to improve administrative effectiveness and to focus its efforts on cost-effective, high-priority actions. Its ultimate goal of meeting the standards necessary to join the EU will require long-term efforts by the government, industry, and all other stakeholders.

This country profile is based on an Environmental Performance Review of Latvia carried out by the UN Economic Commission for Europe. The full text (175 pages) is available from the United Nations, Sales Section, New York or Geneva. ISBN 92-1-116710-8.

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Germany to shift from personal income tax to energy use tax

Germany has passed a law shifting its tax structure to emphasize energy taxes over employment-related taxes. The changes are intended to alter consumption patterns, in order to better protect the environment. As of 1 April 1999, energy taxes increase in Germany: the prices of gasoline and diesel fuel will rise by 6 Pfennig (DM 0.06) per litre, heating oil by 4 Pfennig a litre, natural gas by 0.32 Pfennig per kilowatt-hour, and electricity by 2 Pfennig per kilowatt-hour. Reduced tax rates will apply to manufacturing concerns, agriculture and railways. The increases are well below those originally sought by Germany's environmentalist Green Party. The Greens and Social Democrats compromised on lower rates in an effort to avoid jeopardizing economic growth. The government plans to use the additional tax revenue to pay for a reduction of old-age security premiums to 19.5%.

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UNDP project in Gambia for sustainable development waste strategy

The United Nations Development Programme (UNDP) has approved funding for a project in Gambia that will design a sustainable development strategy for handling national waste streams. The wastes concerned include peanut shells, spent

grain from breweries, and oyster shells. The ZERI Foundation, a non-profit research and project development centre based in Geneva, will design the strategy and assist the Gambian government in its implementation.

Peanut shells and used grain can be combined and dried, and the resulting material can be used to grow mushrooms. Afterwards, the protein-rich leftover material can be used as animal feed. The German Technical Cooperation Agency is assisting with development of a training manual to demonstrate the technique, which has been used effectively in other African countries.

Consumption of oysters, a staple food for Gambians, produces large quantities of waste, but the shells have until now been used only for road-building. Other possible uses include extraction of chitin, which is used to produce hospital equipment. The ZERI Foundation will investigate and develop techniques to put these concepts into action.

For more information, contact: Anders Karlsson, ZERI Foundation. Tel: +41 (22) 97 99 202. E-mail: karlsson@zeri.org. ◆

World Bank to help Nicaragua restore forests

Deforestation due to agriculture and other human activities exacerbated the destruction caused by Hurricane Mitch, which swept through Central America in October 1998. Nicaragua suffered extensive damage to its agricultural areas and tropical forests. To help the country restore forests and rehabilitate other areas devastated by the hurricane, the World Bank has approved the Sustainable Forestry Investment Promotion Project. The project, with a budget of US$ 9 million, will support a grant programme to finance pilot projects for private and communal forestry entrepreneurs. It aims to improve forestry management in the country through environmentally sound private sector investment and an improved business environment in the forestry sector. The project will also focus on ways to reduce risks in the pulp and paper industry.

Forest management in Nicaragua is currently hampered by lack of understanding in the business community concerning how opportunities for productive and sustainable management can be taken advantage of. World Bank officials point out that trees are too often seen as obstacles to agriculture, to be cut or burned down. Development of a good market for forestry products is essential to reverse the trend of deforestation in favour of agriculture.

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Industry Updates

Making wastes profitable

Wastes of all types have become significant sources of raw materials for industry, and enterprises are finding new ways to make use of other companies' wastes or to market their own. Although many wastes cannot be reused in the manufacturing processes that produced them, they can be used as materials for other products. One California company has succeeded in creating its own niche market by targeting industrial sites, setting up shop next to them, and reusing or reselling their waste products. The wastes range from sugar-processing residues, which can be used to make soil additives, to fish processing wastes that are transformed into fish food and fertilizers.

Waste recycling got its start from the environmental movement, but it makes economic sense as well. Raw materials are a major expense in many manufacturing sectors, and enterprises are drawn to waste exchanges because of their potential for savings on raw materials and on waste disposal costs. The financial advantages are drawing more entrepreneurs into the waste exchange business, which has long been encouraged and sometimes subsidized by governments as part of their environmental control efforts. As the commercial side of waste exchanges develops, the emphasis on waste is shifting to a focus on its potential as raw material, and markets in waste are more often being called "materials exchanges".

Transport costs are a critical factor in making waste attractive as a raw material. Existing waste exchanges often do not take the location of buyers and sellers into account, and the price of transport can greatly reduce the cost-effectiveness of reusing waste. Now, encouraged by economic development agencies and driven by market forces, a number of industrial estates are being developed to allow businesses to more easily use wastes generated by their neighbours in their own operations. These "eco-industrial parks" or eco-parks operate on the principle that one company's waste can be another's raw material. Eco-parks are planned or under construction at several locations in the United States, as well as in Mexico, Puerto Rico and Germany.

Eco-parks are intended to improve the economics of waste reuse by reducing transport costs. Some developers hope to create an industrial ecosystem in which several companies use each other's waste products and energy. In Puerto Rico, a developer is trying to attract paper, steel and concrete companies to a site where it is building a trash-to-energy plant. The hope is to have the paper company use recycled paper from the disposal site, while the steel company recycles dumped scrap iron and the concrete company uses ash from trash combustion. All three companies would be able to use the power generated on-site. Likewise, in an eco-park now being built in the State of Mississippi, the Mississippi Economic and Community Development Department is working to bring in companies to work with a power plant being built to use on-site coal and water. The State hopes to attract a brick-maker that can use the clay left over from coal mining; the mining company, in turn, would replace the clay it used to backfill strip mines with fly ash from the power plant. Fly ash would also be used to build roads, reducing the present need to import gravel. There are also plans to reuse industrial water and heat for dry ice production, a greenhouse, a fish farm and food processors.

These ambitious projects have the potential to produce great economic and environmental benefits, but there are potential drawbacks as well as advantages to the eco-park scheme. If one company in an eco-park moves out, or changes its products or methods, it may throw the whole system off. Some environmentalists are also concerned that the potential increase in the value of wastes may act as a disincentive to waste reduction. Even many eco-park advocates acknowledge that it is probably not possible to attract the right mix of tenants based on waste and supply considerations alone. Companies look at many other factors in choosing a site, and local workforces, taxes and markets may be far more important to their decisions. Some eco-park developers have taken a less single-minded approach, seeking a broader range of tenants and then giving them information and incentives to encourage them to use each other's wastes.

The non-profit Sustainable Technology Park Authority of Virginia requires that its tenants adhere to strict environmental standards. It compiles lists of tenants' waste products and hopes to use their availability to attract other companies that can use them. For the moment, however, rent reductions are being offered only to companies that exchange wastes. Executive Director Timothy E. Hayes says that "we aren't setting up the whole park around that, but we hope that the availability of cheap materials will be an incentive to come here."

Much of the information in this article was obtained from "Waste Business Booms as Uses Are Found," an article by Claudia H. Deutsch in The New York Times, *17 March 1999. For more information, contact: Julie Rhodes, Reuse Development Organization, Indianapolis, Indiana 46244, USA, Tel: +1 (317) 631-5395, Fax: +1 (317) 631-5396, E-mail: info@redo.org, Internet: www.redo.org; or Mississippi Department of Economic and Community Development, PO Box 849, Jackson, Mississippi 39205, USA, Tel: +1 (800) 340-3323 (USA only), Internet: www.mississippi.org.* ◆

UNEP Focus

Governing Council approves reforms and budget increase

The 20th session of UNEP's Governing Council was held at UNEP headquarters in Nairobi, Kenya, on 1-5 February 1999. The Council, which meets in regular session every two years, is a forum in which the international community addresses major and emerging environmental policy issues. Ministers and senior officials from over 100 countries attended the meeting, which included a three-day technical segment followed by a high-level ministerial meeting.

UNEP Executive Director Klaus Töpfer opened the meeting with a policy statement, setting out the issues that he believes are of paramount importance to the Council. The statement included a report on the efforts undertaken to revitalize, reform and strengthen the organization. As expected, two issues dominated the meeting: reform and finance.

In the area of reform, the Council gave broad support to the proposed restructuring of UNEP, which conforms to a new integrated work programme focused on the organization's five areas of concentration: environmental monitoring, assessment, information and research including early warning; enhanced coordination of environmental conventions and development of policy instruments; fresh water; technology transfer and industry; and support to Africa. The last Governing Council session two years ago adopted the Nairobi Declaration on the Role and Mandate of UNEP, which re-focused the work of UNEP and gave a clear mandate for its reform and restructuring. The Governing Council endorsed the new work programme, clearly linked to the Declaration, and the associated new functional organization structure of UNEP, introduced at the Special Session of the Governing Council in May 1998. A key element of the new structure is the formation of an environment management group, an inter-agency instrument to improve the coordination of environmental issues within the UN system. The group will report directly to the UN Secretary General.

On the financial side, Töpfer asked contributing governments to approve a US$ 120m budget for the next two years. The amount, approved in full, represents an 11% increase in funding at a time when other UN agencies are faced with decreasing funds. The Council recognized the need for UNEP to have adequate, stable and predictable financial resources in order to meet the environmental challenges of the next century.

Special side-events or panel discussions were also held on a number of topics, including sustainable tourism (chaired by Dr Richard Leakey, Director of the Kenya Wildlife Service) as well as chemicals, forestry, global telecommunications, and the UNEP Financial Institutions Initiative.

For the first time, the meeting agenda was integrated into the agenda of the April 1999 Commission on Sustainable Development meeting, CSD-7, which addresses sustainable tourism, oceans, and the resources and problems of Small Island Developing States.

Töpfer praised the Council's work, saying that while there is still a long way to go, the decisions taken this week are a step in the right direction and leave UNEP better positioned to carry out its mandate in the new millennium. "This session of the Governing Council has been of crucial importance to the future work of UNEP," he said. "I asked for practical and psychological support in our efforts to re-orientate UNEP in response to the new challenges and responsibilities before us. I received a clear, strong, positive answer. UNEP is back on the map."

The UNEP Governing Council, the members of which are elected by the UN General Assembly for a four-year term, assesses the state of the world environment, establishes UNEP's programme priorities, and approves its budget. The Governing Council is composed of 58 members selected on the following basis: 16 seats for Africa; 13 for Asia; six for Eastern Europe; 13 for Western Europe and other States; and ten for Latin America. All other UN members can attend as observers. They are allowed to take part in the debate but cannot vote.

Governing Council documents are available on UNEP's web site at www.unep.org.

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UNEP leads international Task Force against wildlife crime in Africa

Despite the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and other initiatives, the demand for exotic animals and animal parts has increased significantly in recent years. Many of these animals are endangered or protected species whose continued existence is threatened by poaching and illicit trade. In response to the growing need for improved wildlife protection and law enforcement methods, UNEP has established an "African INTERPOL", an international Task Force to fight wildlife crime in Africa. On 17 March 1999, six countries – Congo, Kenya, Lesotho, Tanzania, Uganda and Zambia – formally empowered the Task Force, which will be headquartered at the Kenya Wildlife Service in Nairobi and will operate under the 1994 Lusaka Agreement on Cooperative Enforcement Operations directed at Illegal Trade in Wild Fauna and Flora. The Lusaka Agreement's goal is to reduce and eventually eliminate illegal trade in wildlife. The Task Force will also strengthen the effectiveness of CITES.

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UNEP TIE HIGHLIGHTS

Global Reporting Initiative to improve sustainability reporting practices

Corporate sustainability reporting can be an important tool for companies to use to assess their environmental, social and economic impacts, and to increase awareness of these impacts among the public as well as corporate managers. Since 1993, UNEP has worked to encourage and promote voluntary corporate environmental reporting in order to support responsible decision-making and global progress towards sustainable development. One way it has done this is through the Global Reporting Initiative (GRI), a voluntary process that involves business, NGOs, investors, accountants, consultants and others in an effort to promote and provide guidance for corporate sustainability reporting.

Currently convened by CERES (a non-profit coalition of public and private groups), and incorporating the efforts of UNEP, corporations, environmentalists, consultants, stakeholders and accountancy organisations around the world, the GRI was established in late 1997 with the mission of designing standard, globally applicable guidelines for preparing sustainability reports. It seeks to establish a foundation for reporting that will elevate sustainable development information to the level of general acceptance and practice now accorded financial reporting. To ensure the long-term value of these reporting practices, the GRI also seeks to develop and advocate greater stakeholder scrutiny and use of such reports.

In March 1999, UNEP and other GRI members sponsored a conference in London on the theme "Towards a Common Framework for Corporate Sustainability Reporting." The conference was the occasion for the launch of the Corporate Sustainability Reporting Guidelines, a global set of guidelines intended to be flexible enough to be attractive to industry but also sufficiently rigorous to satisfy environmental groups, the public and other stakeholders. They are designed to be compatible with ISO 14000, EMAS, and other existing reporting tools, and are intended to apply to any size and type of enterprise. The guidelines focus on the "triple bottom line" of economic, social and environmental reporting, building on the 50 core ingredients of environmental reporting established by UNEP. They include recommendations for key indicators to assess social and economic performance, and identify qualitative characteristics that can enhance the credibility and utility of environmental reports.

GRI is establishing an independent organization to monitor the implementation and usefulness of the guidelines and to create a mechanism for changing them as needed. The guidelines are currently being tested by a number of enterprises around the world. UNEP also plans to hold regional workshops aimed at increasing developing country participation and the involvement of industry.

Information on GRI is available on the Internet at the GRI home page, www.globalreporting.org, and at CERES' home page, www.ceres.org/reporting/globalreporting.html.

For more information, contact: Nancy Bennet, UNEP TIE Paris, Tel: +33 (1) 44 37 14 45, Fax: +33 (1) 44 37 14 74, E-mail: nancy.bennet@unep.fr. ◆

UNEP to assist developing countries phase out ozone-depleting substances

UNEP has launched a major initiative to help developing countries phase out ozone-depleting substances (ODS). The Executive Committee of the Multilateral Fund of the Montreal Protocol agreed to give US$ 37 million to fund the initiative, which includes a number of actions to significantly reduce the use of chlorofluorocarbons (CFCs) around the world. Under UNEP's business plan, US$ 7 billion will be used to assist developing countries in meeting their obligations under the Montreal Protocol, while US$ 30 million will go to CFC reduction projects in developing countries. The initiative is especially timely since 1999 marks the end of the grace period given developing countries to start phasing out CFCs.

The Committee approved a US$ 150 million plan to close all CFC-producing facilities in China over the next ten years. China is the world's largest producer of CFCs. The Committee also approved innovative approaches for final phase-out of ODS in the Bahamas, Malaysia and Thailand – countries that are preparing to phase out these substances earlier than the timeline stipulated in the Protocol.

"These critical decisions made by the Committee give a clear signal to all industries, which are using CFCs to quickly convert to alternatives," said UNEP's Executive Director, Klaus Töpfer. "It also raises the need to ensure that refrigerators and other CFC-based equipment shall be able to be serviced without CFCs."

While the programmes of countries which consume large amounts of CFCs have made considerable progress, help with the programme is still needed by countries which have low-volume consumption. UNEP's OzonAction Programme is assisting over 25 small countries to implement legislation and regulation systems. The Multilateral Fund of the Montreal Protocol has also developed and supported innovative approaches to Refrigerant Management Plans, which low-volume consumption countries will use for an integrated strategy of CFC containment, conservation and recycling.

For more information, contact: Mr. Madhava Sharma, Executive Secretary, Ozone Secretariat, P.O. Box 30552, Nairobi, Kenya, Tel: +254 (2) 62 3885, Fax: +254 (2) 62 3913, E-mail: Madhava.Sarma@unep.org; or Mr. Rajendra Shende, Chief, Energy and OzonAction Unit, UNEP Technology, Industry and Economics Division, Tel: +33 (1) 44 37 14 59, Fax: +33 (1) 44 37 14 74, E-mail: rmshende@unep.fr, Internet: www.unepie.org/ozonaction.html.

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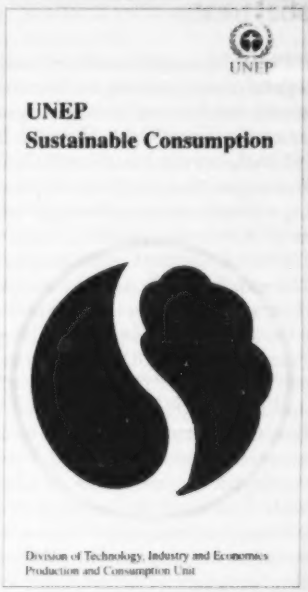
UNEP works for sustainable consumption

In the past, sustainable development has usually been addressed from the supply side, with efforts to make cleaner, "greener" products and to control pollution. Recognizing that production and consumption are two sides of the same sustainability "coin", however, UNEP is addressing them in an integrated manner. Sustainable consumption has been defined by the Commission on Sustainable Development as "the use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life-cycle so as not to jeopardize the need of future generations." UNEP TIE's work in the sustainable consumption area includes adapting tools such as life-cycle assessment, eco-design, and marketing and advertising to promote a sustainable consumption agenda. UNEP promotes use of these tools and dialogue among stakeholders through workshops, expert meetings, research reports, "toolkits" and guides. These activities focus on awareness raising, information exchange, voluntary initiatives in industry, public procurement, and supply chain management.



The next issue of *Industry and Environment* will focus on sustainable consumption, with articles from countries around the world on issues including supply chain management, government purchasing, and advertising and marketing.

For more information, contact: Bas de Leeuw, UNEP TIE Paris, Tel: +33 (1) 44 37 30 09, Fax: +33 (1) 44 37 14 74, E-mail:bas.leeuw@unep.fr.

POPs talks held to negotiate global treaty

UNEP hosted the second round of talks on drafting a global treaty concerning the control of environmental emissions and discharges of persistent organic pollutants (POPs). The talks, held at UNEP headquarters in Nairobi on 25-29 January 1999, were part of a series of five anticipated negotiating sessions that aim to achieve a global agreement on POPs by the year 2000 as required by a 1997 UNEP Governing Council mandate. Over 350 delegates from 103 countries participated.

The treaty effort comes in response to worldwide concern about the dangers of POPs such as PCBs and the pesticide DDT. In his address to the plenary session, UNEP Deputy Executive Director Shafqat Kakakhel said: "These persistent, toxic pollutants travel long distances, far from their source to remote parts of the world. They harm the ecological support system on which life depends. They accumulate and magnify as they move through the food chain, concentrating even in the largest animal species like polar bears and whales. No country is safe from their effects. No person is protected against their presence. Persistent organic pollutants endanger public health and the environment around the globe, causing illness and taking lives. They pose risks to the unborn and endanger generations to come." Because of such factors, he said, "no country, acting alone, can stem the tide."

The talks focused on ways to reduce or eliminate emissions, production and uses of POPs on the initial list identified for action under the UNEP mandate, as well as steps to ensure that all countries are able to implement the provisions. Delegates agreed on a draft text, to be used as the basis for discussions of all substantive articles of the treaty. They discussed technical and policy considerations involved in restricting or eliminating the 12 POPs specified in the UNEP mandate and scientific criteria for identifying other POPs to be included in the treaty. Other key issues include capacity building, technology transfer and financing.

The 12 POPs on the initial action list are aldrin, chlordane, DDT, dieldrin, dioxin, endrin, furans, heptachlor, hexachlorobenzene, mirex, PCBs and toxaphene. They fall into three categories: pesticides, industrial by-products, and unintended by-products of combustion and industrial processes. While delegates broadly agree on the need to control POPs and their environmental and health affects, they also recognized that there are complicating factors in the effort to eliminate them – for example, the need to reduce reliance on DDT to kill mosquitoes while continuing to combat malaria.

A related workshop was held in Hanoi on 16-19 March 1999. Representatives of Asian and Pacific countries discussed alternatives to use of POPs in agriculture, industry, and disease vector control, and reported on actions at the national level to address issues including integrated pest management and the management of stockpiles of outdated and unwanted pesticides.

The next round of POPs treaty talks is scheduled for 6-11 September 1999 in Geneva.

Official documents and other information are available on the Internet at www.chem.unep.ch/pops/.

For more information, contact: Linda Durkee, UNEP Chemicals, Geneva, Tel: +41 (22) 917 8511, Fax: +41 (22) 797 3460; or Tore J. Brevik, Director, UNEP Information and Public Affairs, Tel: +254 (2) 623292, Fax: +254 (2) 623927. ◆

Books & Reports

GENERAL

Sustainable Development Success Stories

Published in conjunction with the sixth session of the Commission on Sustainable Development in April 1998, this collection of "success stories" presents sustainable development experiences from around the world. Organized according to the themes of capacity building, education and awareness raising, freshwater management, and sustainable development in business and industry, each of the 42 case summaries briefly describes the project, the sustainability issues it addressed, and the results achieved. The projects varied widely, ranging from industrial environmental management in Nepal to solar cooking technology in Kenya and Honduras. Most stories are drawn from experiences in developing countries. The projects were carried out by NGOs, women's groups and indigenous peoples' organizations, as well as by governments and the UN. The full collection is also available on the Internet at www.un.org/esa/susdev.

(1998). UN Division for Sustainable Development, 2 UN Plaza, New York, New York 10017, USA. Tel: +1 (212) 963-3170, Fax: +1 (212) 963-1267, E-mail: dsd@un.org, Internet: www.un.org/esa/susdev. P&b, 89p.

Law in Environmental Decision Making

This collection of essays focuses on how environmental law influences and is influenced by other areas of law. The authors, who are practising lawyers or academics from a variety of legal specialties, consider environmental law from the perspectives of public tort and international law, as well as discussing the evolution of regulations and environmental decision-making. Although the emphasis is mainly on the British and European legal experience, some authors also discuss how globalization and the increase in international regulation affect the decision-making process and consider the limitations of legal approaches to environmental change.

Tim Jewell and Jenny Steele, eds. (1998). Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK, Tel: +44 (1865) 556 767, Fax: +44 (1865) 556 646, Internet: www.oup.co.uk. Hbk, 294p. ISBN 0-19-826077-6.

Sustainable Economics and Management: A Student Agenda for Research and Teaching

This volume presents the proceedings of the first annual meeting of oikos, the International Student Organization for Sustainable Economics and Management. The organization's goal is to integrate sustainable development guidelines into university research agendas and teaching curricula, especially in the areas of management and economics. Topics discussed at the December 1998 meeting at St. Gallen, Switzerland, included innovation and entrepreneurship, accounting and controlling, human resources, marketing, public finance, and international trade as they relate to sustainability.

(1999). oikos international, Bodanstrasse 2, 9000 St. Gallen, Switzerland, Tel: +41 (71) 224 2698, Fax: +41 (71) 223 2651, E-mail: makeadifference@oikosinternational.org, Internet: www.oikosinternational.org. P&b, 40p.

International Environmental Auditing

Environmental auditing is an ever more commonly used means for companies to assess their environmental performance, whether voluntarily or in compliance with regulations. Originally an internal management tool, auditing requirements are now being incorporated into voluntary codes of conduct, government regulations and industry guidelines. As public environmental awareness

increases, there is growing public demand for companies to reveal their environmental performance. Auditing reports provide a way to do so. This book, with an emphasis on multinational corporations and international transactions, is intended for auditors and corporate personnel who are considering audits. It focuses on the policy, legal and technical aspects of auditing and includes an analysis of international environmental auditing initiatives, programmes and organizations, as well as a discussion of auditing and disclosure obligations and confidentiality issues in 19 countries. The book also covers international environmental treaties, conventions and agreements.

David D. Nelson (1998). Government Institutes, 4 Research Place, Rockville, Maryland 20850, USA. Tel: +1 (301) 921-2300, Fax: +1 (301) 921-0373, E-mail: giinfo@govinst.com, Internet: www.govinst.com. Hbk, 787p. ISBN 0-86587-588-X.

Heaven's Flame: A Guide to Solar Cookers

Solar cookers use the magnified heat of the sun to cook food. They can be made of materials as common and inexpensive as cardboard and aluminium foil. The author, a solar cooking advocate, aims to show that they can be used to cook food thoroughly and nutritiously without consuming fuel or creating air emissions. They may be especially valuable in locations where cooking fuel, especially firewood, is scarce or expensive or where deforestation is a serious problem. Solar cookers can also be used to boil water and may therefore be useful where clean drinking water is not available. This comprehensive guide to solar cookers examines technical and practical aspects of numerous types of available cookers, as well as illustrations of a wide variety including some large enough to feed a village. It also includes plans and instructions for building a simple and inexpensive cooker from recycled materials.

Joseph Radabaugh (1998). Home Power Publishing, P.O. Box 275, Ashland, Oregon 97520, USA. Tel: +1 (530) 475-0830, Fax: +1 (530) 475-0941, Internet: www.homepower.com. Pbk, 143p. ISBN 0-9629588-2-4.

Life Cycle Assessment

The European Environment Agency has produced this guidebook to promote integration of life cycle assessment (LCA) into the design and production of new products. Life cycle assessment involves analysis of environmental and other aspects of a product from raw materials to disposal. It can provide data to support decision-making, in conjunction with other tools such as environmental impact assessment and risk assessment. The guidebook discusses LCA's role in sustainable development, its application to various business sectors and situations, and a methodological framework for performing the analysis. An extensive list of information sources is also included.

(1998). European Environment Agency, Kongens Nytorv 6, DK-1050 Copenhagen K, Denmark. Tel: +45 33 36 71 00, Fax: +45 33 36 71 99, E-mail: eea@eea.eu.int, Internet: www.eea.eu.int. Pbk, 119p. ISBN 92-9167-079-0.

"Sustainable Cities Revisited", *Environment and Urbanization*, Vol. 10, N° 2 (October 1998)

Agenda 21, adopted at the 1992 Rio de Janeiro Earth Summit, calls for governments, UN agencies, local and regional administrators, community organizations and the public to implement an action programme for sustainable development. Local government was given a key role in providing information and education to mobilize the general public to achieve sustainable development, and Agenda 21 called for local authorities to create their own Local Agenda 21s.

It has become clear that implementation of Agenda 21 is proceeding more slowly than had been hoped. The difficulties of reconciling economic and environmental interests have delayed or derailed many of the actions considered essential to achieve sustainable development. Local actions, which make up two-thirds of the 2500 action items of Agenda 21, are among the few bright spots. This issue of *Environment and Urbanization* presents papers on environmental actions at the local level, many of them linked to Agenda 21, in cities across the developing world. It provides examples and case studies of projects in the areas of urban agriculture, waste management, transport, urban services and homelessness. Some authors also address experiences in developing Local Agenda 21 programmes and offer regional perspectives on Agenda 21 and sustainable cities.

Environment and Urbanization is a twice-yearly journal that examines environmental issues related to urban areas and urbanization in Africa, Asia and Latin America. A follow-on issue on sustainable cities is scheduled for publication in October 1999; back issues on other themes are also available. A sister publication, *Medio Ambiente y Urbanizacion*, publishes Spanish-language articles and concentrates on Latin America.

(1998). International Institute for Environment and Development, 3 Endsleigh Street, London WC1H 0DD, UK. Tel: +44 (171) 388 2117, Fax: +44 (171) 388 2826, E-mail: humans@iied.org, Internet: www.iied.org/human/env_urb.html, Pbk, 276p.

Bending the Curve: Toward Global Sustainability

Bending the Curve examines the evolutionary and transformational changes that would be needed to guide human development onto a more sustainable path in the next century. The authors note that although a shift to more sustainable forms of development must begin with evolutionary changes in current development patterns, the leap to a truly sustainable society at the global level will require more fundamental social and institutional changes. In order to start developing strategies, they introduce a set of environmental and social criteria as goals for long-term sustainability. They list sustainability indicators and goals in five areas: climate stabilization, reduction of material flows, decrease in toxic loads on the environment, reduction of pressure on freshwater resources, and protection of ecosystems.

An analysis of current development patterns is used to establish a reference, showing how present socioeconomic, environmental and resource use trends diverge from their established sustainable development goals. The authors then suggest a policy reform strategy to push long-term development patterns closer to sustainability.

P. Raskin, G. Gallopin, P. Gutman, A. Hammond and R. Swart (1998). UNEP, P.O. Box 30552, Nairobi, Kenya, Tel: +254 (2) 621 234, Fax: +254 (2) 226 886, E-mail: eiainfo@unep.org, Internet: www.unep.org. Pbk, 118p. ISBN 91-88714-57-8.

Greening the Financial Sector

The Carl Duisberg Gesellschaft, in partnership with UNEP, hosted a workshop on "Greening the Financial Sector" in Berlin in October 1998. Representatives of the financial sector from around the world discussed the role played by the financial and insurance markets in sustainable development, as well as the possibilities for alternative approaches to financial business activities. The workshop's goals were to facilitate dialogue and sharing of ideas among private sector decision-makers, especially those from the North and South, and to bring together experts from the public and private sectors. Issues addressed by speakers included climate change, green investment, environmental reporting, and the role of government policy. This volume of proceedings, which includes the papers presented at the event and a summary of the results, is available from Ecologic Berlin (Tel: +49 (30) 226 511 35).

(1998). Carl Duisberg Gesellschaft e. V., Weyerstrasse 79-83, D-50676 Cologne, Germany. Tel: +49 (221) 20 98 0, Fax: +49 (221) 20 98 111, E-mail: info@cdg.de, Internet: www.cdg.de. Pbk., 41p.

ENERGY

Biomass Energy: Data, Analysis and Trends

Biomass energy sources include fuel wood, agricultural residues, animal waste, charcoal and other fuels derived from plant and animal sources. They provide some 14% of the world's energy overall and up to 90% of the energy consumption of some developing countries. However, because biomass energy is still mainly non-marketed and is often used in traditional, non-commercial ways, collecting and assessing reliable data is difficult.

The International Energy Agency (IEA), the OECD, the European Commission, and UNEP's Division of Technology, Industry and Economics jointly sponsored a conference in Paris in March 1998 to gain a better understanding of biomass energy use patterns and the transition of biomass energy from non-commercial to commercial energy forms. The conference addressed the need for

better data in order to analyse trends and consumption patterns in biomass energy use, to model future trends, and to design coherent energy strategies, as well as to evaluate the effects of biomass energy use on the environment and on global carbon dioxide emissions.

This volume of conference proceedings contains keynote speeches and papers presented on topics including biomass energy statistics, energy analysis and projections, environmental implications and policy scenarios. Participants from Asia, Africa, the Americas and Europe also presented regional perspectives. The proceedings conclude with a summary of IEA and other work in this area, the progress and work yet to be done in the area of biomass energy statistics and analysis, and the role of biomass energy in sustainable development.

(1998). OECD Publications, 2, rue André-Pascal, 75775 Paris Cedex 16, France. Tel: +33 (1) 45 24 82 00, Fax: +33 (1) 49 10 42 76, Internet: compte.pubsinq@oecd.org, Pbk, 341p. ISBN 92-64-16194-5.

CLIMATE CHANGE/ AIR POLLUTION

The Regional Impacts of Climate Change: An Assessment of Vulnerability

Climate change and changes in climate variability can have potentially disastrous effects on human health, ecological systems and economies. The degree to which these effects may occur is a critical concern for government policy-makers, who must decide how to respond. The Intergovernmental Panel on Climate Change (IPCC) has prepared this assessment of different regions' vulnerability to climate change effects, with the aim of providing scientific information that can serve as a basis for policy decisions. The report analyses impacts on a continental or subcontinental scale that may be of more practical use to decision-makers. Numerous areas of vulnerability to climate change are identified, and management options are recomended that could help many sectors better adapt to and withstand its effects.

R.T. Watson, M.C. Zinyowera, R.H. Moss and D.J. Dokken, eds. (1998). Cambridge University Press, The Edinburgh Building, Cambridge CB2 2RU, UK. Tel: +44 (1223) 312393, Fax: +44 (1223) 315052, E-mail: information @cup.cam.ac.uk, Internet: www.cup.cam.ac.uk, Pbk, 517p. ISBN 0-521-63455.

International Emissions Trading Under the Kyoto Protocol

This OECD Information Paper, prepared for the Fourth Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), clarifies several important issues related to principles, modalities, rules and guidelines for emissions trading under the Kyoto Protocol. Among these are participation by legal entities, national and international accounting systems, and ways to encourage compliance through the rules of the trading system.

(1998). OECD Publications, 2 rue André Pascal, 75775 Paris Cedex 16, France. Tel: +33 (1) 45 24 82 00, Fax: +33 (1) 49 10 42 76, Internet: compte.pubsinq@oecd.org, Pbk, 26p.

Monitoring, Reporting and Review of National Performance under the Kyoto Protocol

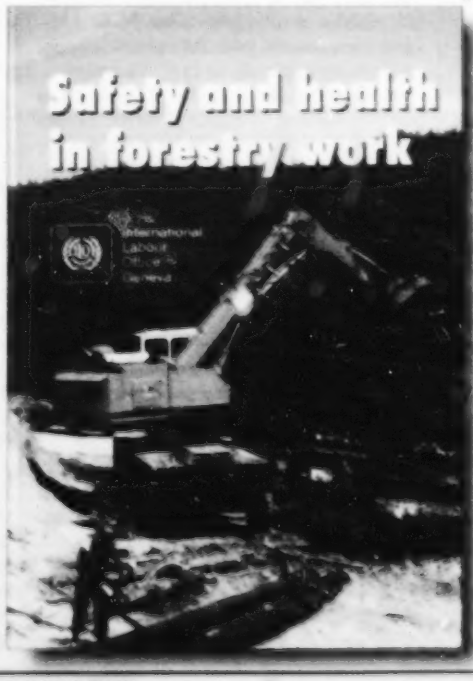
Another OECD Information Paper, this document discusses ways to adapt the existing UNFCCC compliance requirements to the commitments created under the Kyoto Protocol. Monitoring, reporting and review functions are important aspects of the Protocol. Although it is not scheduled to enter into force until 2001 or later, earlier actions can be taken to improve the existing compliance system that will then allow rapid implementation of the Protocol.

(1998). OECD (see above). Pbk, 46p.

INDUSTRY SECTORS

Safety and health in forestry work

Forestry is one of the world's most hazardous occupations, with a high rate of accidents and occupational disease. On the premise that workplace safety in forestry is not only an ethical imperative but is essential to sound financial and environmental management, the International Labour Organisation has prepared this handbook on health and safety practices in forestry. It discusses ways to integrate safety into overall enterprise management, training and skills certification, and technical guidance on logging operations and forest fire-fighting. The guidance, based on international experience, is intended to be applicable in most countries and forestry-related enterprises. The handbook is also available in French and Spanish.



(1998). ILO Publications, 4, route des Morillons, 1211 Geneva 22, Switzerland. Fax: +41 (22) 799 6938, E-mail: pubvente@ilo.org, Internet: www.ilo.org, Pbk, 166p. ISBN 92-2110826-0.

World-Wide Fuel Charter

This booklet presents recommended fuel specifications developed by the American Automobile Manufacturers Association (AAMA), the European Automobile Manufacturers Association, the Engine Manufacturers Association and the Japan Automobile Manufacturers Association. They include fuel quality standards for three types of markets: those with minimal or no requirements for emissions controls; those with stringent emissions controls requirements, such as the EU and the United States; and those with advanced requirements for emissions controls, such as the State of California.

(1998). AAMA, 1401 H Street NW, Suite 900, Washington, DC 20005, USA, Tel: +1 (202) 326-5500, Fax: +1 (202) 326-5567, Pbk, 43p.

CHEMICALS, POLLUTION AND ACCIDENTS

Evaluation of Demonstrated and Emerging Technologies for the Treatment and Clean Up of Contaminated Land and Groundwater, Pilot Study Reports 1985-1998

These pilot studies, sponsored by the North Atlantic Treaty Organization Committee on the Challenges of Modern Society (NATO/CCMS), were carried out to identify and analyse new and alternative technologies for contamination clean-up, and to transfer information on their technical and economic performance to potential users. They bring together the results of studies on the feasibility and effectiveness of various technologies from several different countries involving *in situ* and *ex situ* remediation of various contaminants and media. The studies include information not only on successes, but on projects that demonstrated the failures or limitations of technology, information that can be critical in making informed decisions on remediation methods, and defining priorities for future research and development.

Complete pilot study reports are available on a single CD-ROM from the US EPA. Most reports are also available in print.

(1998) NATO/CCMS, Scientific Affairs Division, Brussels, Belgium. To order CD-ROM: order number EPA 542-C-98-004, US EPA Office of Solid Waste and Emergency Response.

Washington, DC 20460, USA, Tel: +1 (800) 490-9198 (USA only), Fax: +1 (513) 489-8695, E-mail: allaire.michael@epa.gov.

IPCS Environmental Health Criteria

The International Programme on Chemical Safety (IPCS) is a joint venture between UNEP, the International Labour Organisation and the World Health Organization (WHO). The IPCS Environmental Health Criteria series provides critical reviews of potential health and environmental effects of chemicals and combinations of chemicals. They are primarily risk evaluations and are based on published and unpublished studies. The books are in English with summaries in French and Spanish. The series is available from WHO and from sales agents for WHO. Two new titles are available:

EHC 209: Flame Retardants: Tris(chloropropyl) Phosphate and Tris (2-chloroethyl) Phosphate *(1998). Pbk, 106p. ISBN 92-4-157209-4.*

EHC 207: Acetone *(1998). Pbk, 158p. ISBN 92-4-157207-8.*

WHO, Distribution and Sales, CH-1211 Geneva 27, Switzerland. Tel: +41 (22) 791 2476, Fax: +41 (22) 791 4857, E-mail: publications@who.ch.

IPCS Screening Information Data Set for High Production Volume Chemicals

The IPCS Screening Information Data Set (SIDS) series provides an initial assessment of the risks to human health and the environment of existing high production volume (HPV) chemicals and a basis for decisions on whether these risks warrant further investigation. The series is available from UNEP Chemicals, Case Postale 356, CH-1219 Châtelaine/Geneva, Switzerland. Fax: +41 (22) 797 34 60. The most recent titles are:

SIDS Vol. 5, Part 1: o-Cresol, 1,4-Dicyanobutane, 1-Dodecanol, and Glutaraldehyde *(1998). Pbk, 320p.*

SIDS Vol. 5, Part 2: Ethylene; Maleic Acid, Dibutylester; Methanesulfinic Acid, Aminoimino; Triethylphosphate; and Vanillin *(1998). Pbk, 311p.*

IPCS INCHEM CD-ROM

This CD-ROM contains all IPCS publications, including the Environmental Health Criteria monographs and the SIDS (see above) and several other series. Updated versions are issued periodically. The INCHEM database is also available on the Internet at www.inchem.org.

(1998). Canadian Centre for Occupational Health and Safety, 250 Main Street East, Hamilton, Ontario L8N 1H6, Canada, Tel: +1 (905) 570-8094, Fax: +1 (905) 572-2206, E-mail: custserv@ccohs.ca, Internet:www.inchem.org.

WATER

Sourcebook of Alternative Technologies for Freshwater Augmentation in East and Central Europe

This publication is part of the IETC Technical Publication Series on freshwater augmentation (see below). It includes consideration of specific regional conditions and the methods best suited to local needs. Case studies are presented for projects in Poland and Ukraine, and field surveys include information on the three major watersheds of the region: the Baltic Sea basin, including Latvia and Poland; the Black and Caspian Seas basin, including Ukraine, Romania and Hungary; and the Mediterranean Sea basin, including Albania.

(1998). UNEP IETC (see below). Pbk, 125p. ISBN 92-807-1475-6.

Sourcebook of Alternative Technologies for Freshwater Augmentation in Small Island Developing States

Many countries face increasing demand for fresh water because of growing populations and continued development of industry and agriculture. There are many ways, both modern and traditional, to improve water supplies, but lack of communication and information transfer among water managers in different countries has hampered their use. This source book, prepared in collaboration with several international and regional agencies and sponsored by UNEP's International Environmental Technology Centre (IETC), is intended to provide water resource managers and planners with information on a wide range of technologies in use in small island states throughout the world. It is particularly aimed at managers and planners in developing countries or economies in transition.

The sourcebook presents technical descriptions and a discussion of suitability and other considerations for methods to improve domestic, agricultural and industrial supplies. It includes consideration of specific conditions in island countries and the methods best suited to local needs. This is part of the IETC Technical Publication Series on freshwater augmentation.

(1998). UNEP IETC, Osaka Office: 2-110 Ryokuchi Koen, Tsurumi-ku, Osaka 538-0036, Japan, Tel: +81-6-6915-4581, Fax: +81-6-6915-0304. Shiga Office: 1091 Oroshimo-cho, Kusatsu City, Shiga 525-0001, Japan, Tel: +81-77-568-4582, Fax: +81-77-568-4587, E-mail: ietc@unep.or.jp, Internet: www.unep.or.jp/. Pbk, 223p. ISBN 92-807-1476-4.

NATIONAL/REGIONAL

Mining Environmental Handbook

Subtitled "Effects of mining on the environment and American environmental controls on mining," this handbook focuses mainly on mining and the environment in the United States. It includes discussions of the US regulatory climate and history, the role of the states in mining regulation, and the activities and views of other groups including environmentalists and industry associations. Also included are more broadly applicable technical studies on the environmental effects of mining and on technologies for controlling mine wastes. The authors focus mainly on hard rock mining, with chapters devoted to environmental management of solution, placer and coal mining, treatment of acid mine drainage, and use of abandoned mines as landfills. There is a brief discussion of international environmental controls in the industry. The book is intended primarily for those involved in mining operations or management.

Jerold J. Marcus, ed. (1997). Imperial College Press, 516 Sherfield Building, Imperial College, London SW7 2AZ, UK. Dist. World Scientific Publishing Co., Inc., 1060 Main Street, River Edge, New Jersey 07661, USA. Tel: +1 (201) 487-9655, Fax: +1 (201) 487-9656. Hbk. 785p. ISBN 1-86094-029-3.

Green Productivity and Role of Top Management: In Search of Sustainable Asia Through Green Products and Services

The Asian Productivity Organization's 1998 Top Management Forum focused on "green productivity", a concept based on the idea that productivity improvement and environmental preservation are not mutually exclusive and, in fact, can reinforce each other. These papers, presented at the Forum, include discussions of environmental considerations in purchasing, ISO 14000 and top management, resource productivity, and other topics related to productivity and the environment.

(1998). Asian Productivity Organization, 4-14,

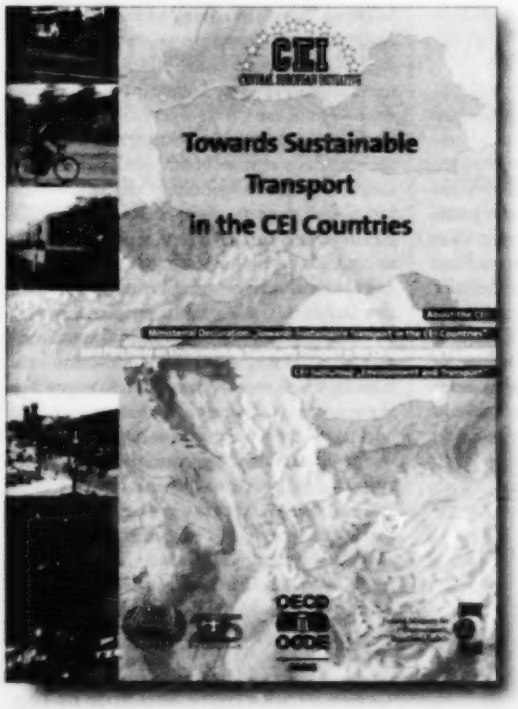
Akasaka 8-chome, Minato-ku, Tokyo 107-0052, Japan. Tel: +81 (3) 3408-7221, Fax: +81 (3) 3408-7220, E-mail: aop@gol.com, Internet: www.apo-tokyo.com. Pbk, 134p. ISBN 92-833-2231-2.

Towards Sustainable Transport in the CEI Countries

In the past decade, Central and Eastern European countries have seen a huge increase in car and truck traffic, while non-motorized transit, rail freight traffic and public transit have all declined substantially. These patterns are inconsistent with sustainable development and have negative impacts on human health and the environment. This brochure presents the results of a joint pilot study conducted by UNEP, the OECD and the Austrian Federal Ministry for Environment, Youth and Family on sustainable transport scenarios through 2030.

The study, which focused on 14 transitional countries in the region, analysed current trends in transport and their possible environmental impacts. It examined possible ways to reduce these impacts by modeling three "environmentally sustainable transport scenarios" based on technological improvements, transport demand management, and a combination of the two. The study's conclusions take local and regional variations into account and call for a diversified approach to achieving sustainable transport.

(1999). UNEP Regional Office for Europe, 15, chemin des Anémones, CH-1210 Châtelaine/Geneva, Switzerland. Tel: +41 (22) 917 8276, Fax: +41 (22) 797 3420. Pbk, 65p.



Pollution Control of Small-Scale Metal Industries in Nairobi

Small industrial concerns tend to be given little attention in the effort to control industrial pollution, but their combined environmental impact can be quite significant. Because of their small size and usually very limited financial resources, it is often difficult for small-scale industries to apply pollution control methods or meet environmental standards on their own. This book, the result of a study of three small metal-working enterprises in Nairobi, makes the case that small businesses need outside support in cleaner production and waste prevention, and that such support can have a substantial effect in reducing their environmental impacts. As part of the study, the authors surveyed the operations and environmental profiles of small-scale industries in a number of sectors and countries. Their conclusions and recommendations may be applicable to enterprises in other developing countries as well.

J. Frijns, P. Kirai, J. Malombe and B. van Vliet (1998). Wageningen Agricultural University, Dept. of Sociology, Hollandsweg 1, 6706 KN Wageningen, The Netherlands, Fax: +31 (7) 483 990. Pbk, 161p. ISBN 90-6754-500-7.

North American Environmental Law and Policy

The Commission for Environmental Cooperation (CEC) was established under the North American Free Trade Agreement (NAFTA) to address regional environmental concerns, handle trade and environmental conflicts, and promote enforcement of environmental laws among NAFTA members. This is the first volume of a planned series that includes official documents, CEC Secretariat documents, and official determinations made under Article 14 of the North American Agreement for Environmental Cooperation, the environmental side accord to NAFTA.

(1998). CEC, 393, rue St-Jacques Ouest, Bureau 200, Montreal, Quebec H2Y 1N9, Canada. Tel: +1 (514) 350-4300, Fax: +1 (514) 350-4314, Internet: www.cec.org. Pbk, 205p. ISBN 2-89451-233-3.

EDITIONS FRANCAISES

Recueil francophone des traités et textes internationaux en droit de l'environnement

Cette compilation de textes de droit international de l'environnement présente une sélection des traités, bilatéraux et multilatéraux, et des résolutions, recommandations et déclarations. Les textes retenus, notamment en ce qui concerne les conventions, sont ceux auxquels au moins un Etat francophone est partie. Les instruments adoptés dans le cadre de l'Union européenne ont été exclus de la sélection, car ils font déjà l'objet d'une publication par les services de la Commission.

Chaque document présente l'intitulé complet du texte, sa date d'adoption ou de signature, son lieu d'adoption, sa date d'entrée en vigueur, le dépositaire, et lorsque cela a paru indispensable, les annexes, les protocoles et les amendements éventuels. Ne figurent pas l'état des ratifications et du nombre d'Etats parties au traité. Toutefois la mention du dépositaire ou l'adresse du secrétariat permet au chercheur de s'adresser directement à l'un ou à l'autre pour obtenir des renseignements complémentaires.

Ce recueil fait également l'objet d'une publication dans la collection Universités francophones – nouveaux supports, sur docmef (CD-ROM).

(1998). Universités francophones / AUPELF-UREF, Bruylant, avenue W. Churchill 221, 1180 Bruxelles, Belgique. 719 p. ISBN 2-80027-1141-5.

Gestion de la privatisation et de la restructuration des services publics de distribution (eau, gaz et électricité)

Le rapport, établi par le Bureau international du Travail, examine l'évolution des services publics de distribution – eau, gaz et électricité – et plus particulièrement les nouvelles technologies, les contraintes en rapport avec l'environnement, la libéralisation et la privatisation, ainsi que les répercussions de ces transformations sur l'emploi, les conditions de travail et les relations professionnelles. Il décrit également la manière dont ces changements sont gérés par les partenaires sociaux et d'autres parties prenantes, compte tenu des intérêts des travailleurs et de la société.

(1999). Bureau international du Travail, Publications du BIT, CH-1211 Genève 22, Suisse, 124 p. ISBN 92-2-211449-3.

Guide du partenariat scientifique avec des pays en développement – 11 principes

Ce guide présente onze principes applicables aux activités de partenariat scientifique entre des pays industrialisés – la Suisse en l'occurrence – et des pays en développement. Les principes 1 à 7 se rapportent directement aux activités de partenariat scientifiques, tandis que les principes 8 à 11 – faire connaître les résultats, exploiter les résultats, partager équitablement les gains, renforcer le potentiel de recherche, assurer l'acquis – vont au-delà des aspects généralement considérés comme inhérents à la recherche.

Chacun de ces principes donne lieu à des considérations sur les objectifs, la mise en oeuvre et le contrôle. Les objectifs exposés correspondent à l'idéal vers lequel il s'agit de tendre à long terme. Les indications de mise en oeuvre présentent des

Web Site Highlight

Planeta
www.planeta.com

Planeta, which grew from a publication of the same name, is a clearinghouse for environmental news and ecotourism information for the Americas. It provides information on options pursued throughout the hemisphere to promote environmental conservation, cultural understanding and local economic development, particularly through responsible tourism. It includes more than 8000 pages of short articles and scholarly reports. There are numerous links to sites focused on sustainable development in the Americas.

For more information, contact: Ron Mader, Planeta.com, E-mail: ron@greenbuilder.com.

Sustainable Business.com
www.sustainablebusiness.com

This site focuses on trends and news in the sustainable development area, with an emphasis on business. Site features include the *Sustainable Business Insider*, an on-line monthly magazine that collects news items and editorials from trade publications; lists of business opportunities and job openings in related fields; and a library of web sites, databases, reports, and books on topics related to sustainable development.

For more information, contact: Rona Fried, E-mail: rfried@hccom.com; or Kim Weddingfeld, Global Environment & Technology Foundation, 7010 Little River Turnpike, Suite 300, Annandale, Virginia 22003, USA, Tel: +1 (703) 750-6401, E-mail: getf@getf.org

Centre for Science and the Environment
www.oneworld.org/cse

The India-based Centre for Science and Environment (CSE) is a public interest research and advocacy organization for environmentally sound development and democracy. It promotes community involvement and stakeholder participation in natural resource management. The site features *Down to Earth*, a fortnightly journal on environment-related developments in India; information on the CSE's programmes in public information, policy research and advocacy; and links to books, journals, articles, documents, images and videos on the environment produced in the past 15 years.

For more information, contact: Anil Agarwal, Director, CSE, 41, Tughlakabad Institutional area, New Delhi – 110062, India, Tel: +91-11-6986399 or 6983394, Fax: +91-11-6985879, E-mail: cse@cseindia.org.

moyens d'atteindre ces objectifs. L'aspect contrôle servira d'outil de travail (de check list) aux instances qui émettent ou reçoivent des requêtes. La liste de questions devra être adaptée et complétée au besoin, en fonction de chaque cas particulier.

(1998) Commission suisse pour le partenariat scientifique avec les pays en développement, Secrétariat KFPE, Barneplatz 2, CH-3011 Berne, Tél : +41 (31) 311 06 01, Fax : +41 (31) 312 16 78, E-mail : kfpe@sanw.unibe.ch, URL : http://www.kfpe.unibe.ch, 56 p.

Notre avenir pour objectif – Actions pour l'environnement en Europe – 25 thèmes en un coup d'oeil – Deuxième édition

Donner au lecteur non spécialiste un panorama de l'état actuel de notre environnement et des mesures prises dans ce domaine à l'échelle européenne, tel est le but de cet ouvrage constitué de 25 fiches abordant différents aspects de l'environnement. Pour chaque thème, l'ouvrage présente au lecteur les principaux faits et tendances que les connaissances actuelles permettent de dégager. Ces informations sont suivies d'un bref développement sur les mesures prises par les institutions européennes et d'un survol des propositions pendantes. Chaque chapitre s'achève par une description des différents acteurs et une analyse de leurs responsabilités dans le domaine en question. La structure de l'ouvrage met également en évidence les liens existant entre les différents thèmes.

(1998) Office des publications officielles des Communautés européennes, L-2985 Luxembourg, 140p. ISBN 92-828-4423-4.

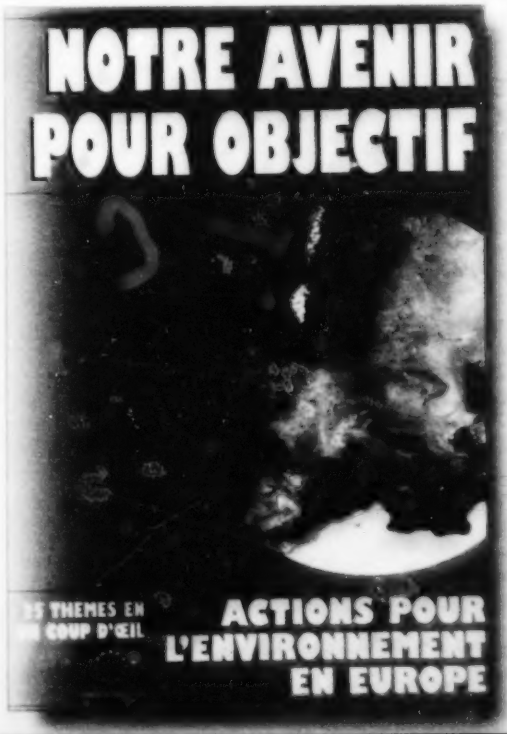
Le développement durable

Pour clore son cycle d'activité de 1996-1998, la Commission Française du Développement Durable a souhaité faire un état des actions et des acteurs du développement durable en France. Le rapport 1998 de la Commission a pour objet de montrer la richesse des initiatives prises en faveur du développement durable.

Ce rapport est constitué de cinq répertoires. Le premier recense les acteurs : associations, organismes, collectivités locales et experts. Le deuxième présente les actions menées par les associations, les organismes et les collectivités locales. Les troisième et quatrième recensent les organismes de recherche et les organismes de formation. Enfin le cinquième fournit une bibliographie accessible au grand public.

Le rapport s'accompagne d'un CD-ROM qui contient l'ensemble des documents édités par la Commission Française du Développement Durable.

(1998), Commission Française du Développement Durable, 20 avenue de Ségur, 75302 Paris SP, France, Tél : +33 (1) 42 19 17 79, Fax : +33 (1) 42 19 17 90, E-mail : cfdd@environnement.gouv.fr



Les défis internationaux de la politique énergétique française

Les actes du colloque « Les défis internationaux de la politique énergétique française » organisé en juin 1998 par Michel Destot, spécialiste des questions énergétiques, présentent les interventions qui, pour l'essentiel, ont tenté de répondre aux questions suivantes : Quelles seront les conséquences de la dérégulation du marché européen et de l'émergence de nouveaux marchés ? Quel avenir pour les industries françaises ? Quelles stratégies industrielles mettent-elles en oeuvre ? Quelles vont être les conséquences du sommet de Kyoto ? Comment la France riche d'une expérience et d'un savoir-faire particulièrement remarquables dans le domaine énergétique et particulièrement dans le secteur nucléaire, va-t-elle valoriser ses atouts dans le concert international ?

Michel Destot, Mc&M Conseil, Organisation – Edition – Communication, 13 rue du 4 septembre, 75002 Paris, France, Tél : +33 (1) 40 20 98 88, Fax : +33 (1) 40 20 98 89, URL : http://mmconseil.com, Poche, 200 p.

Guide de l'eau 1999-2000 – 29ème édition

Ces dernières années, le secteur de l'eau et de l'assainissement a subi de profondes mutations, en même temps que se produisaient presque partout des tensions quant à la disponibilité et à la vulnérabilité de la ressource. Confronté à ces évolutions et à ces mutations, le Guide de l'eau évolue et s'adapte.

La 29ème édition se compose de quatre chapitres. Le chapitre sur le cadre institutionnel recense les structures administratives dans le secteur de l'eau, leurs compétences, leurs attributions : il comporte une sélection d'une cinquantaine de textes, directives, lois et décrets reproduits intégralement.Le chapitre sur les acteurs consititue la partie annuaire du guide. Le chapitre sur les données décrit pour chacun des six bassins le contenu, les objectifs et les moyens des septièmes programmes d'intervention des agences de l'eau. Le dernier chapitre se compose d'un répertoire alphabétique des fournisseurs et prestataires de services dans le domaine de l'eau, puis d'un répertoire thématique professionnel répertoriant plus de 2000 fournisseurs en fonction de 585 catégories de matériels, produits, procédés, savoir-faire, etc.

Le guide s'accompagne d'un CD-ROM MAC/PC regroupant les chapitres 1, 2 et 4 du guide.

Pierre Johanet & fils Editeurs S.A., 30 rue René Boulanger, 75010 Paris, France, Tél : +33 (1) 42 40 00 08, Fax : +33 (1) 42 40 26 46 , E-mail : info@editions-johanet.com, URL : http://www.editions.johanet.com.

Dossier pédagogique – Mieux comprendre l'environnement : les marées noires

Ce dossier pédagogique s'adresse aux classes des lycées et collèges. Il comprend : un livret de l'enseignant fournissant la matière nécessaire à l'enseignement des sciences de la vie et de la terre, de la chimie, de la géographie et de l'économie ; une pochette de 12 transparents conçus pour être utilisés en séquence ou isolément, accompagnés d'un jeu de textes explicatifs à l'usage de l'enseignant ; une affiche « Histoire d'une marée noire » accompagné de deux feuillets thématiques illustrant le cas de l'*Amoco Cadiz* en Bretagne.

Des documents complémentaires (photos, graphiques, schémas) permettant de mieux illustrer un enseignement ou une recherche personnelle sont à la disposition des enseignants et des élèves sur les sites Internet http://www.elf.fr et http://www.ifremer.fr/cedre.

Elf, Direction Recherche, Technologie, Environnement, Direction Environnement et Sécurité, Bureau 34H40, Tour Elf, 92078 Paris La Défense cédex, France, Fax : +33 (1) 47 44 69 18.

From Peru

I want to congratulate you for the high quality of *Industry and Environment*. As a professional in the environmental assessment and control field, holding a Masters Degree from the University of Pittsburgh, I am aware, through the magazine, of the new trends and achievements which are the most useful in my task of helping to develop sound environmental practices in my country, Peru. Since I also teach, the input provided by the magazine is essential for me.

Pedro Olortegui, Eng. MPH
148, I St., Lima 18, Peru

THE UNEP DIVISION OF TECHNOLOGY, INDUSTRY AND ECONOMICS

Current uses and development of natural resources, technologies and production processes, as well as urbanisation patterns, have negative effects on human health and the environment. This is illustrated by unsustainable use of water, land and energy, air and water pollution, persistent and toxic bio-accumulative chemicals in the food chain, and other environmental problems. In order to have a healthy environment, there is a need to change how we produce and consume goods and services. Part of this change also involves revising and developing economic policies and trade practices to integrate environmental issues into the planning and assessment processes.

The UNEP Division of Technology, Industry and Economics (UNEP TIE) was created in 1998 to help decision-makers in government, local authorities, and industry develop and adopt policies and practices that:

- are cleaner and safer;
- make efficient use of natural resources;
- ensure adequate management of chemicals;
- incorporate environmental costs;
- reduce pollution and risks for humans and the environment.

UNEP TIE, located in Paris, is composed of:

♦ **The International Environmental Technology Centre (Osaka)**, which promotes the adoption and use of environmentally sound technologies with a focus on the environmental management of cities and freshwater basins, in developing countries and countries in transition.

♦ **The Production and Consumption Unit (Paris)**, which fosters the development of cleaner and safer production and consumption patterns that lead to increased efficiency in the use of natural resources and reductions in pollution.

♦ **The Chemicals Unit (Geneva)**, which promotes sustainable development by catalysing global actions and building national capacities for the sound management of chemicals and the improvement of chemical safety world-wide, with a priority on Persistent Organic Pollutants (POPs) and Prior Informed Consent (PIC, jointly with FAO).

♦ **The Energy and OzonAction Unit (Paris)**, which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition, and promotes good management practices and use of energy, with a focus on atmospheric impacts. The UNEP/RISØ Collaborating Centre on Energy and Environment supports the work of the Unit.

♦ **The Economics and Trade Unit (Geneva)**, which promotes the use and application of assessment and incentive tools for environmental policy and helps improve the understanding of linkages between trade and environment and the role of financial institutions in promoting sustainable development.

UNEP

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If you would like to respond to something you've read in these pages – to agree or to take issue with a point of view, to clarify a point of fact, or to provide information on a particular aspect – write to us. If you would like to air your views on any other subject relevant to ***Industry and Environment***, we would like to hear from you. As space is limited, we cannot guarantee to publish all letters, nor to publish long ones in full.

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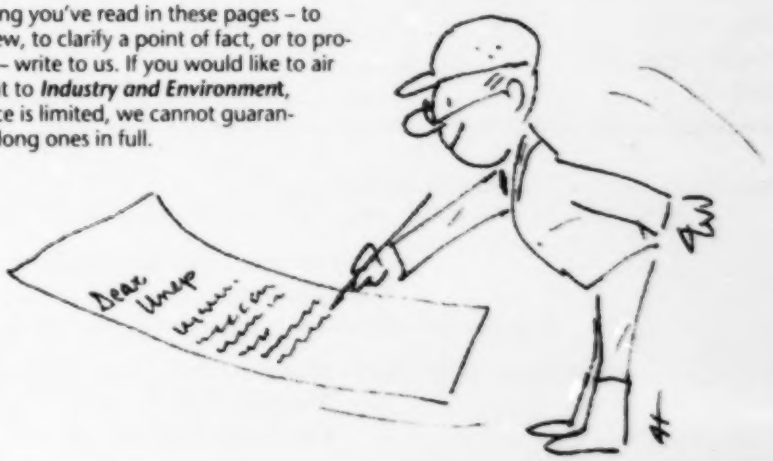

Industry and Environment review

a publication of the United Nations Environment Programme
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For over 15 years, the quarterly ***Industry and Environment*** has provided a forum for exchanging information and experience. Articles are contributed by industry managers, government officials, researchers and others who are active in the field of sustainable industrial development. In addition to reporting developments of broad international interest, each issue focuses on a particular theme such as the construction industry, environmental management of industrial estates, product development, industrial accidents, mining, voluntary initiatives, and service industries. For a complete list of past issues and their availability, contact UNEP TIE or visit the web site http://www.uneptie.org/home.html.

The two next issues of ***Industry and Environment*** will focus on the themes of sustainable food production and sustainable consumption.

While ***Industry and Environment*** is an English language publication, it often includes articles in French and Spanish. All contributed articles are accompanied by summaries in English, French and Spanish.

The review is also available in Chinese.
For further details, please contact:
Professor Chen Dingmao, Research Center
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